
GPS AutoSteer System

Installation Manual



Supported Vehicles

Case Magnum 7210	Case Magnum 8910
Case Magnum 7220	Case Magnum 8920
Case Magnum 7230	Case Magnum 8930
Case Magnum 7240	Case Magnum 8940
Case Magnum 7250	Case Magnum 8950

LEGAL DISCLAIMER

Note: Read and follow ALL instructions in this manual carefully before installing or operating the AutoSteer system.

Note: Take careful note of the safety information in the Safety Information section and throughout this manual.

The manufacturer disclaims any liability for damage or injury that results from failure to follow the instructions and warnings set forth herein.

Please take special note of the following warnings:

1. There is NO obstacle avoidance system included in the manufacturer's product. Therefore, users must always have an operator on the equipment when the AutoSteer system is in use to look for any obstacles including people, animals, trees, ditches, buildings, etc.
2. During installation of the AutoSteer system and during the Calibration and Tuning processes the vehicle's wheels turn from side to side and the vehicle moves. Be sure that all people and obstacles are clear of the vehicle before installation, calibration and tuning, or use of the AutoSteer system.
3. Use of the AutoSteer system is NOT permitted while the vehicle is on public roads or in public areas. Ensure that the system is OFF before driving on roads or in public areas.

Special Requirements

Tools

This list consists of the tools required to complete the installation. The installer is assumed to have a complete set of common installation tools.

Tape measure 12 ft (3.6 m) minimum	3/8" wrench	1/2" socket and ratchet
8mm socket and ratchet	7/16" wrench	9/16" socket and ratchet
10mm socket and ratchet	1/2" wrench	15/16" socket and ratchet
13mm socket and ratchet	9/16" wrench (2)	#1 Philips screwdriver
17mm socket and ratchet	11/16" wrench	#2 Phillips screwdriver
11mm socket and ratchet	13/16" wrench	#2 Philips stubby screwdriver
1/8" Allen wrench	3/4" wrench	Hack saw
5/32" Allen wrench	7/8" wrench	Step ladder
Electrical tape	15/16" wrench	Power Drill
5000 psi pressure gauge	1-1/8" wrench	10mm" Drill Bit

Vehicle Requirements

- The vehicle steering system must be in good working order before installing the AutoSteer system. Check for loose or worn parts. Before installing the AutoSteer system drive the vehicle and confirm that it steers straight and the wheels can be turned from lock to lock. Check the steering system hydraulic hoses and connections to ensure there are no oil leaks.
- The vehicle electrical system and battery must be in good working order.
- The vehicle should be fully cleaned before installing the AutoSteer system. A clean vehicle will improve the overall installation and cable routing.
- This installation kit only supports installations on tractors that use a non reactive steering system. To confirm that your tractor has non reactive steering, drive the tractor at low speed in a small circle and let go of the steering wheel. If the steering wheel does not rotate and the front wheels hold their position and do not return towards center (straight ahead) position, then you have a non reactive steering system and can proceed with the installation. If the steering wheel rotates slowly and the front wheels return towards center position, then your tractor has reactive steering and will require additional parts to complete the installation. Contact your dealer to order the necessary parts.

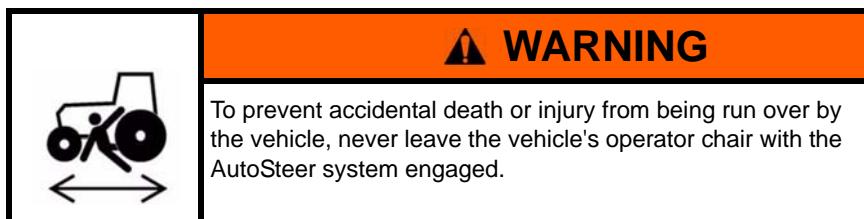
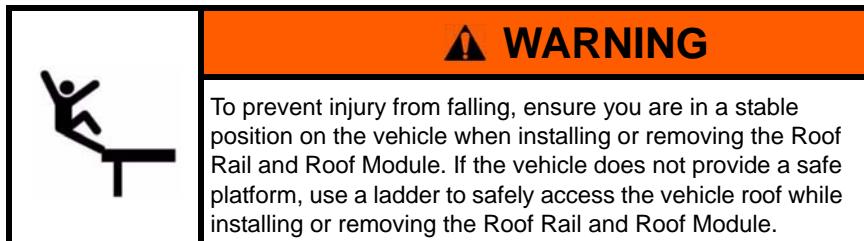
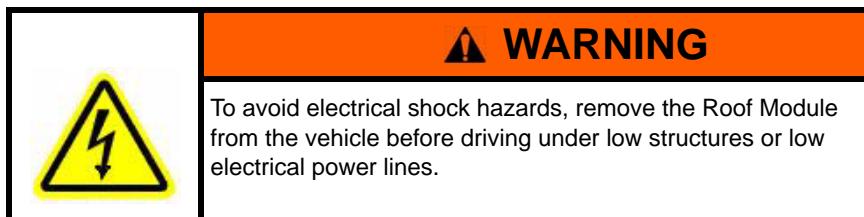
Safety Information

Warning Alerts

The AutoSteer system installer and manufacturer disclaim any responsibility for damage or physical harm caused by failure to adhere to the following safety requirements:

- As the operator of the vehicle, you are responsible for its safe operation.
- The AutoSteer system is *not* designed to replace the vehicle's operator.

Note: Verify all screws, bolts, nuts, and cable connections are tight after the final installation of the AutoSteer system on the vehicle.





⚠ WARNING

High-Pressure Fluid Hazard

Read this manual before installation. Wear hand and eye protection while performing hydraulic system maintenance. Relieve hydraulic system pressure before servicing the hydraulic system.



⚠ WARNING

To understand the potential hazards associated with the operation of AutoSteer system equipment read the provided documentation before installing the AutoSteer system on a vehicle.



⚠ WARNING

To prevent the accidental engagement of AutoSteer and loss of vehicle control while driving on roads, shut down the AutoSteer system (exit the program). Never drive on roads or in public areas with the AutoSteer system turned on.

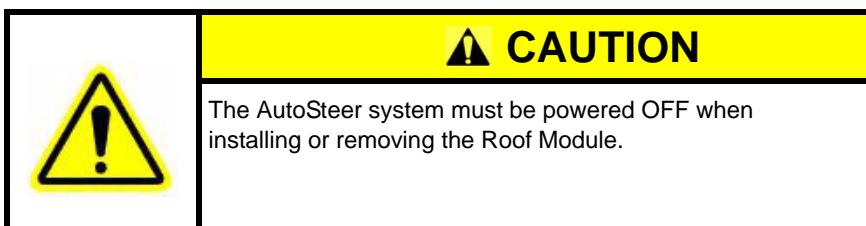
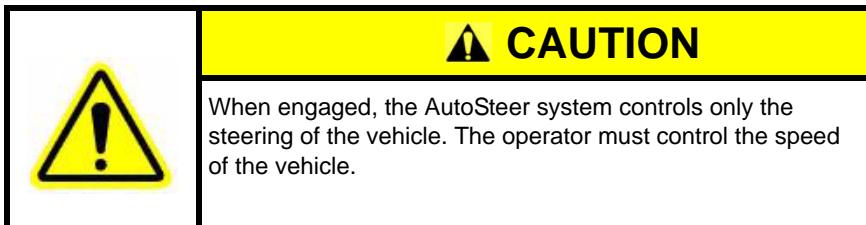
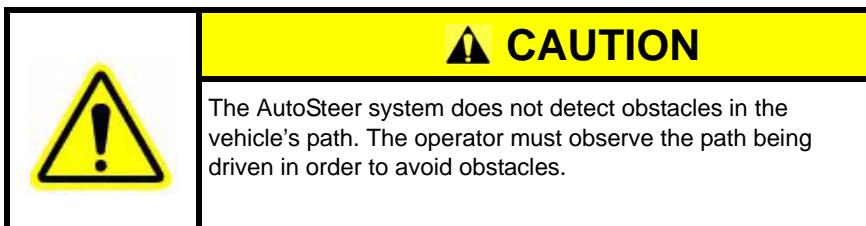
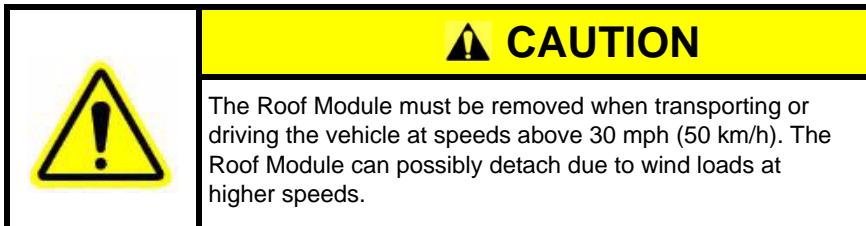


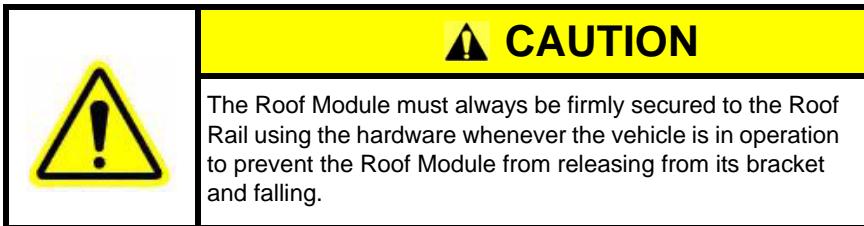
⚠ WARNING

Do not stand close to the wheels and do not move the machine while you are adjusting the Relief Valve. Turn off the engine and engage the parking brake before standing under or next to the machine.

Caution Alerts

The AutoSteer system installer and manufacturer disclaim any responsibility for damage or physical harm caused by failure to adhere to the following safety requirements:





Important Information

Note: Verify all screws, bolts, nuts, hose connections, and cable connections are tight after the final installation of the AutoSteer system on the vehicle.

Technical Support

Refer to your Display user manual for technical support information.

Contact Information

Refer to your Display user manual for contact information.

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Installation Overview

This **Installation Overview** chapter contains part numbers, kit overview diagram, cabling diagram and the installation procedure.

- *Vehicle Inspection*
- *Kit Overview*
 - *Kit Overview*
 - *Assemblies*
- *Installation Procedure Outline*
- *Cable Diagram*

Vehicle Inspection

Before installing the AutoSteer system, confirm the vehicle steering system is in good working order. Drive the vehicle and verify the vehicle's correct working order. Also, ensure the following system operations and components:

- Check to see if you can turn the steered wheels from lock to lock.
- Ensure the vehicle steers straight.
- Check for loose or worn steering components.
- Ensure the hydraulic fluid level is correct.
- Service the vehicle if the steering is not in good working order.

Kit Overview

This Kit Overview section is divided into sub-sections for each of its assemblies and their components are described in the following sections.

Kit Overview

This assembly is shown in *Figure 1-1* and its components are defined in *Table 1-1*.

Figure 1-1 Case Magnum Kit Components (PN: 188-0051-01)

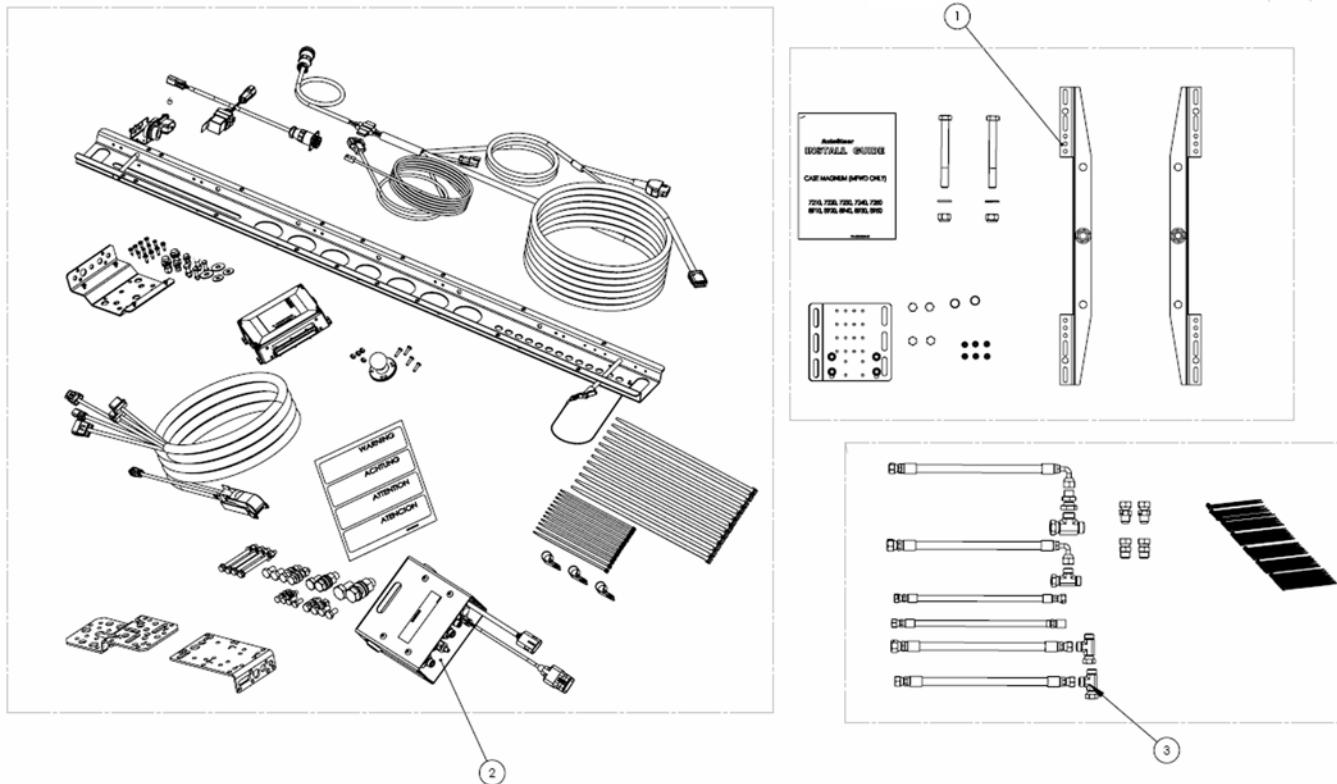


Table 1-1 Installation Kit Components (PN: 188-0051-01)

Item	Component	Part Number
1.	Case Magnum Bracket Kit	152-0067-01
2.	Steering Valve Kit	153-0001-01
3.	Hose Kit	500-0350-01

Assemblies

The Case Magnum vehicle installation kit contains the following components:

- *Steering Valve Kit Components*
- *Hose Kit Components*
- *Bracket Kit Components*

Steering Valve Kit Components

Figure 1-2 Installation Kit Components (PN: 153-0001-01)

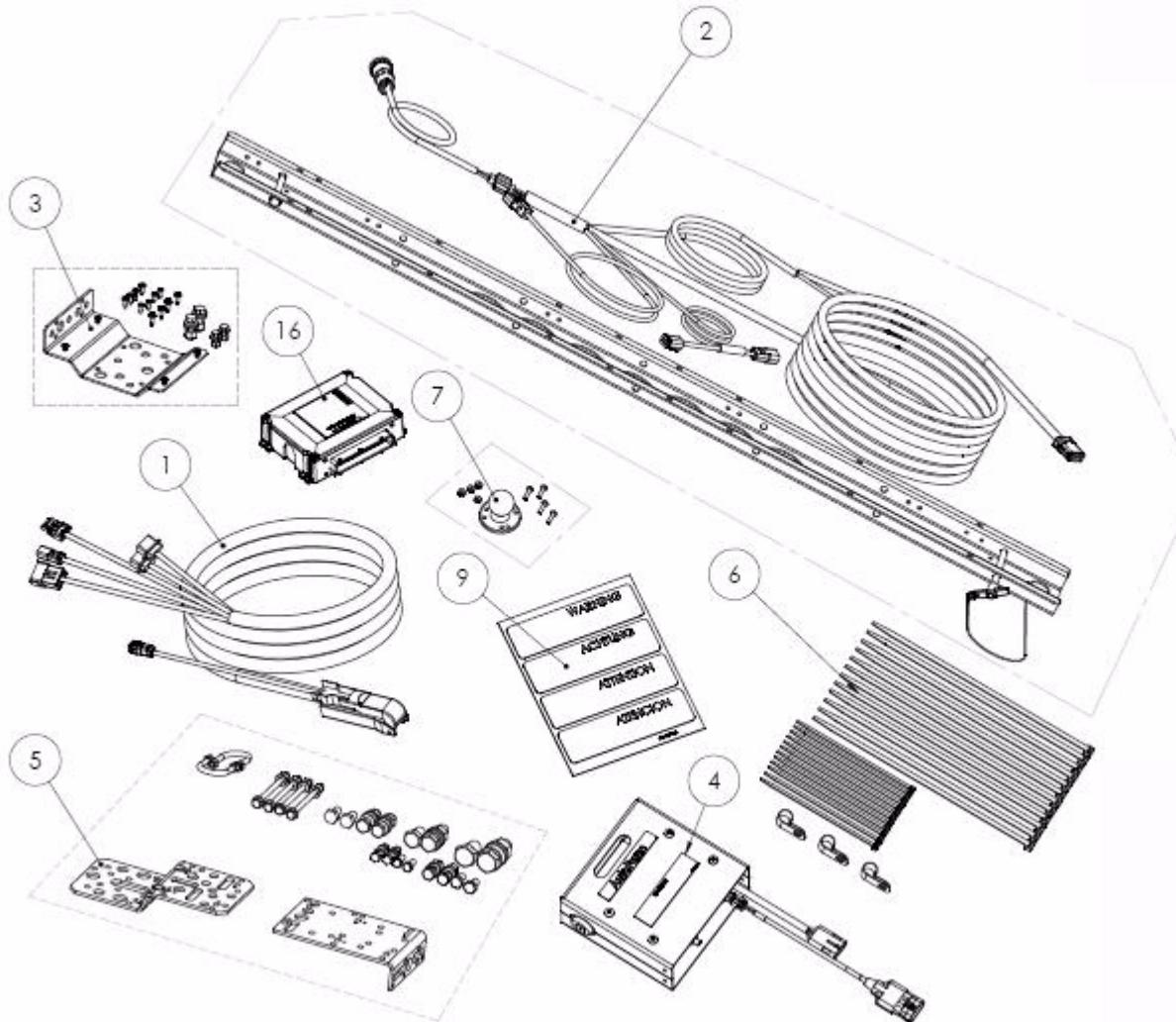


Table 1-2 Steering Kit Components (PN: 153-0001-01)

Item	Component	Part Number
1.	SA Module Harness	201-0371-02

Assemblies

Item	Component	Part Number
2.	Common Installation Kit	200-0497-02
3.	SA Module Bracket	200-0190-01
4.	Valve Assembly	200-0457-01
5.	Valve Bracket Kit	200-0434-01
6.	Mounting Hardware	200-0076-01
7.	Display Mounting Base Assembly	200-0508-01
9.	Warning Labels	603-0074-01
16.	SA Module Assembly	200-0206-01

Hose Kit Components

Figure 1-3 Hose Kit Components (PN: 500-0350-01)

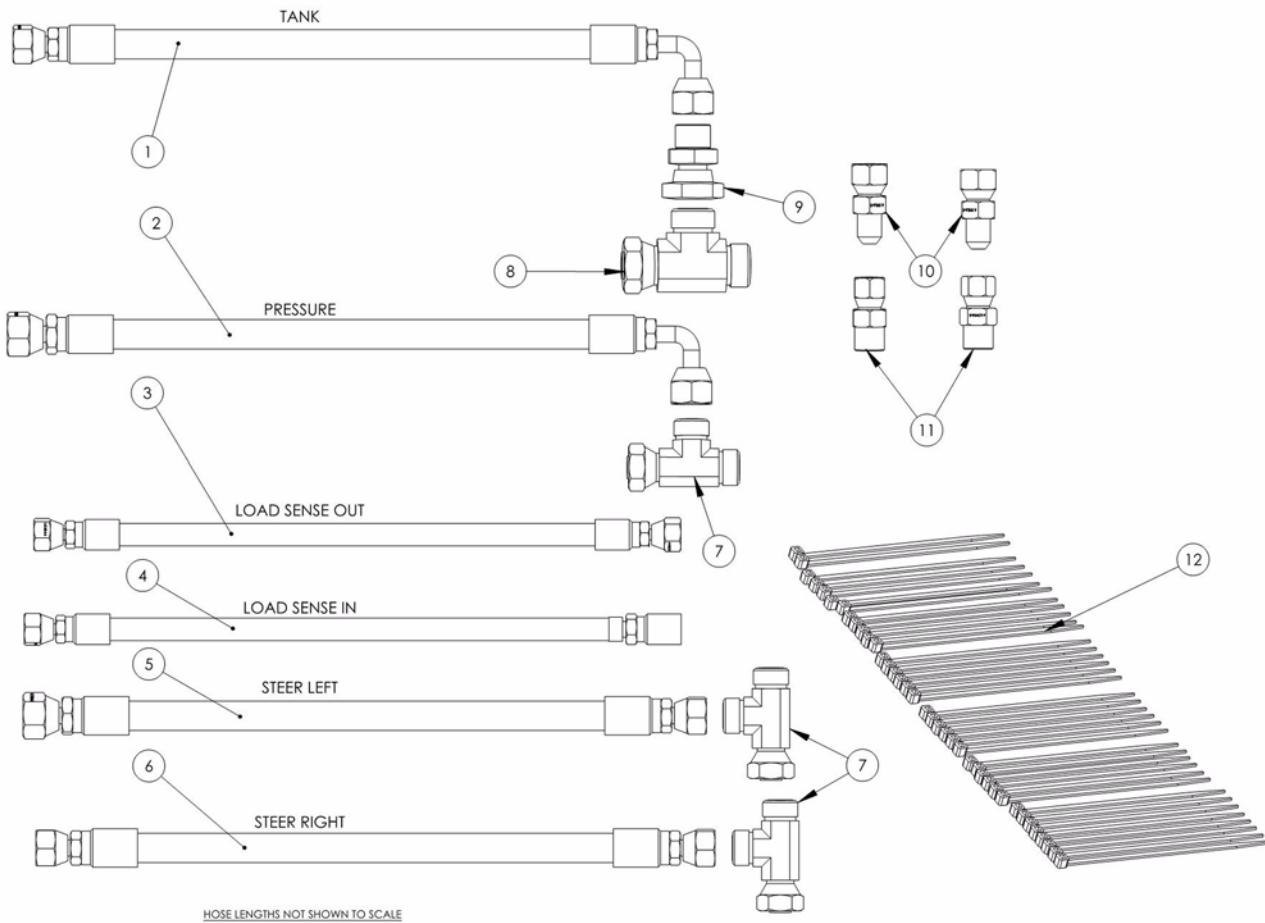


Table 1-3 Hydraulic Kit Components (PN: 500-0350-01)

Item	Component	Part Number
1.	Hose Assembly 3/8" x 62"	F451TC-JCJ9060806-62
2.	Hose Assembly 3/8" x 69"	F451TC-JCJ9080806-69
3.	Hose Assembly 1/4" x 69"	F451TC-JCJC040404-69
4.	Hose Assembly 1/4" x 49"	F451TC-JCJ0040404-49
5.	Hose Assembly 3/8" x 65"	F451TC-JCJC060806-65
6.	Hose Assembly 3/8" x 63"	F451TC-JCJC060606-63
7.	Adapter Run Tee	8 R6LO-S
8.	Adapter Run Tee	10 R6LO-S
9.	Adapter Expander	10-8 LOHL6-S

Item	Component	Part Number
10.	ADAPTER -8F ORFS X -8M JIC	8 XHL6-S
11.	ADAPTER -8F JIC X -8M ORFS	8 LOHX6-S
12.	Cable Ties	200-0467-01

Bracket Kit Components

Figure 1-4 Bracket Kit Components (PN: 152-0067-01)

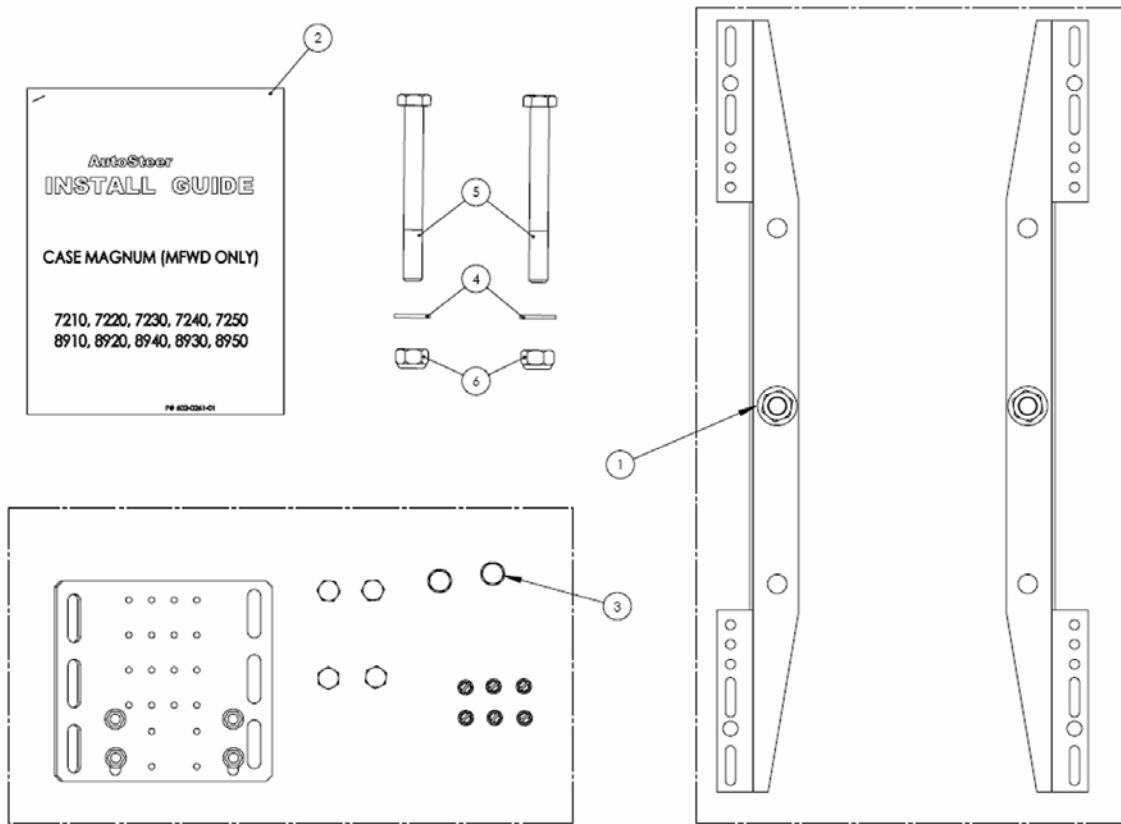


Table 1-4 Bracket Kit Components (PN: 152-0067-01)

Item	Component	Part Number
1.	Roof Module Brackets	200-0387-02
2.	Installation Guide	602-0261-01
3.	Display Bracket	200-0492-02
4.	Washer M16X30X3	517-0007-01
5.	BOLT M16X2X150 HEX GRADE 8.8	513-0035-01
6.	LOCKNUT M16 HEX STEEL	519-0015-01

Installation Procedure Outline

Note: The system interconnect cable diagram in the *Cable Diagram* on page 8 section of this chapter shows the AutoSteer electrical connections.

1. Verify shipped components.

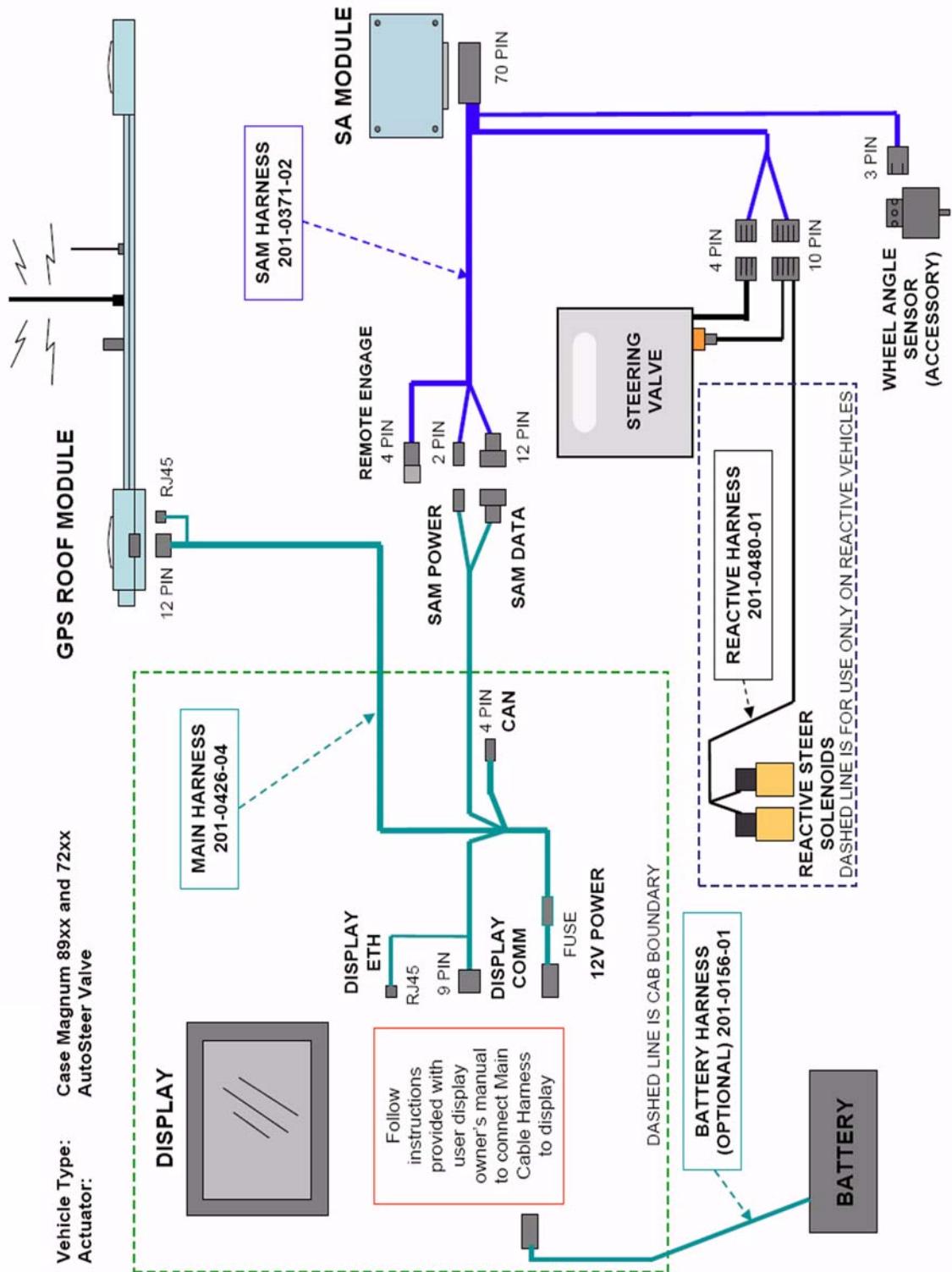
Note: *Step 2, Step 3, Step 4, Step 5, Step 8, Step 9, and Step 14* are skipped if installing an electric steering actuator.

2. Install the Hydraulic Steering Valve Assembly.
3. Install the Hydraulic Hoses.
4. Install the Wheel Angle Sensor. (Optional)
5. Install the SA Module.
6. Install the Roof Rail on the cab roof.
7. Install the Roof Module on the Roof Rail.
8. Install the SA Module Harness and route cables to the various sensors.
9. Route SA Module Harness towards the cab.
10. Install the Display Bracket and the RAM Mount Ball inside the cab.
11. Install the Display using a RAM Mount Arm.
12. Install the Main Cable Harness and route cables to Roof Module and power connector.

Note: Instructions for connecting the vehicle kit cables to the Display can be found in the Display user manual.

13. Connect the Main Cable Harness to the Display Harness.
14. Connect the Main Cable Harness to the SA Module Harness.
15. Verify all connectors are properly coupled and secured.
16. Power ON the AutoSteer system.
17. Calibrate the vehicle.
18. Tune the vehicle.
19. Verify the system has been installed properly and operates satisfactorily.

Cable Diagram



Steering Valve Installation

This **Steering Valve Installation** chapter information is provided in the following sections:

- *Steering Valve Installation Procedure Overview*
- *Reactive Steering Test*
- *Steering Valve Assembly*
 - *Steering Valve Configuration*
- *Install the Steering Valve Bracket*
- *Hydraulic Hose Connection Procedures*
- *Steering Valve Installation Checklist*

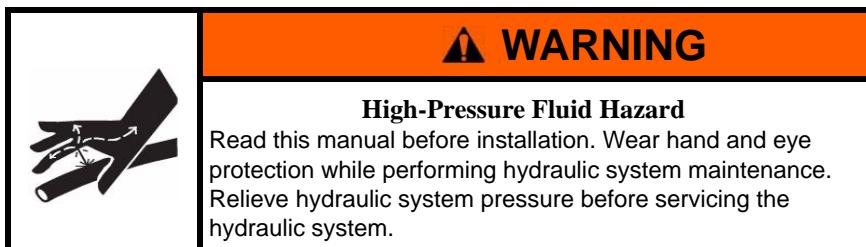
Steering Valve Installation Procedure Overview

Note: You can use a fiberglass cable puller to make it easier to pull the hydraulic hoses and electrical cables through and around the vehicle.

1. Ensure the Steering Valve plug and orifice configuration is correct before installation.

Note: See the *Steering Valve Configuration* section for Steering Valve plug and orifice configuration information.

2. Install the Steering Valve Bracket and Steering Valve on the vehicle.
3. Connect the hoses between the Steering Valve and the vehicle steering system.
4. Check for oil leaks.
5. Adjust the Pressure Relief Valve.
6. Perform a functional test to confirm correct Steering Valve operation.



Reactive Steering Test

Reactive steering systems on farm vehicles use an Orbitrol that allows the centering of the front wheels when the steering wheel is released, much like a passenger car.

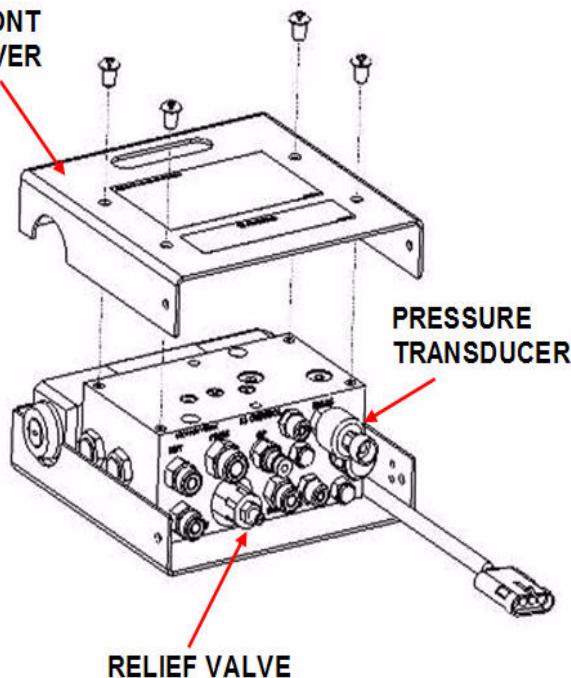
To determine if a farm vehicle has reactive steering, steer the vehicle in a small circle at low speed and let go of the steering wheel.

- If the steering wheel rotates slowly and the front wheels return to center position (straight ahead), it is a reactive steering system. In this case refer to the instructions in Appendix A at the end of this document and contact your local dealer to order the required parts listed in the appendix.
- If it is a non-reactive steering system, the steering wheel will not rotate and the front wheels will hold their position. Reactive steering systems are not very common in North America and are more often found on tractors manufactured in Europe.

Steering Valve Assembly

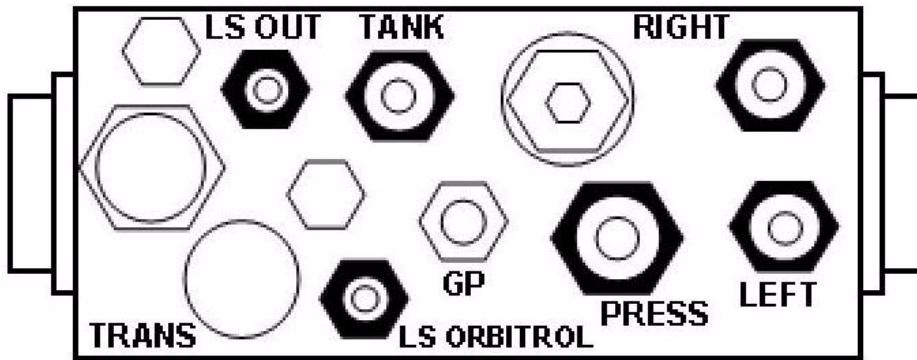
1. Use a 3/16" Allen key to remove the four cover screws. See *Figure 2-1*.
2. Remove the front cover to access the hose connections, pressure transducer and relief valve. See *Figure 2-1*.

Figure 2-1 Steering Valve Assembly



Note: *Figure 2-2* shows the Steering Valve assembly hydraulic connection functions and *Table 2-1* describes hose adapters and fitting sizes.

Figure 2-2 Steering Valve Port Identification



Note: The ports shown in *Figure 2-2* are upside-down relative to the ports shown in *Figure 2-1*.

Table 2-1 Valve Functions and Fitting Sizes

Hose Adapter	Fitting Type/Size
PRESS = PUMP PRESSURE	-8 ORFS
TANK = TANK / RETURN	-6 ORFS
LS ORBITROL = LS FROM ORBITROL	-4 ORFS
LS OUT = LS (to Priority Valve)	-4 ORFS
LEFT = LEFT STEERING CYLINDER	-6 ORFS
RIGHT = RIGHT STEERING CYLINDER	-6 ORFS
GP = DIAGNOSTICS PORT	1/8" (SAE J1502)
TRANS = PRESSURE TRANSDUCER	SAE - 4 ORB.

Steering Valve Configuration

The AutoSteer valve must be properly configured for correct operation. The vehicles supported in this manual use a closed center orbitrol dynamic load sense plug and orifice configuration.

Note: These configuration instructions are only used when the valve has been moved from another vehicle or for troubleshooting purposes.

This installation requires no changes to the steering valve internal plug configuration. The valve may be installed in this application with the factory default settings as specified in *Table 2-2*. The location of the three internal plugs and orifices are identified by stamped numbers on the manifold.

Note: The internal plugs and orifices are accessed by first removing the larger external plug.

Note: The configuration summary provided in *Table 2-2* is used exclusively for troubleshooting purposes and to determine if a Steering Valve transferred from another vehicle may have been configured differently.

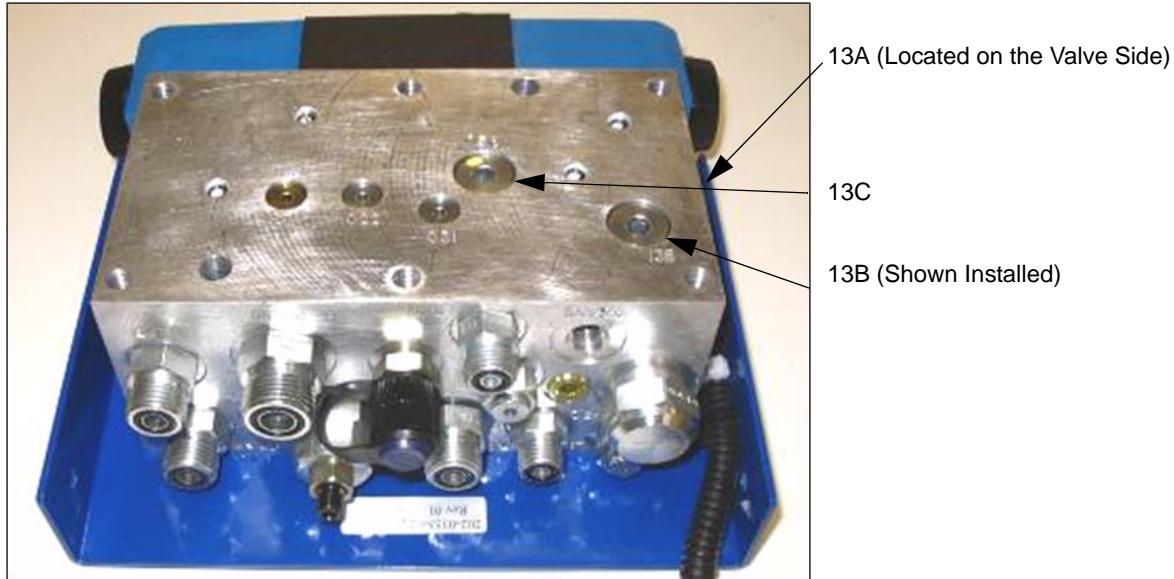
Table 2-2 Plug and Orifice Configuration Summary

Type of Installation	13A	13B	13C
Factory Default Configuration	Plug	Open	Plug

Note: Do not install this valve on other vehicles without the appropriate installation manual. Incorrect valve configuration and wrong hose connections can cause immediate and severe pump damage.

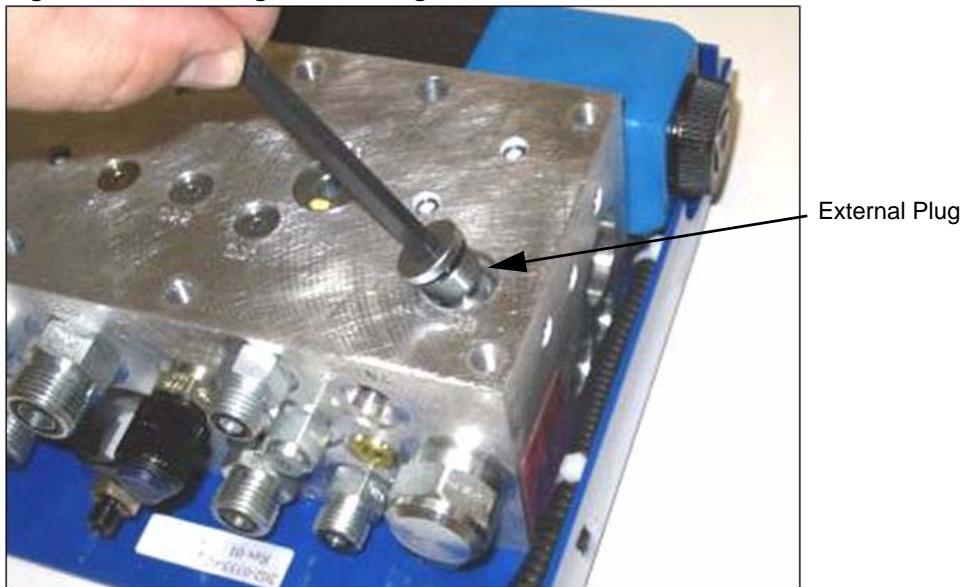
1. Remove the front valve cover using a 3/16" hex key to loosen the four screws.
2. Identify the three threaded plugs. See *Figure 2-3*.

Figure 2-3 Steering Valve With Cover Removed



3. Identify the large external access plug identified in position **13B**.
4. Remove the external plug in position **13B** using a 1/4" hex key. See *Figure 2-4*.

Figure 2-4 Removing External Plug



5. Confirm there is no internal plug installed in position **13B**.
6. If present, remove the internal plug in the **13B** position using a 1/8" hex key.
7. Re-install the large external plug in position **13B**.
8. This concludes the plug and orifice verification. The valve is now ready for vehicle installation.

Install the Steering Valve Bracket

1. Locate area on the right hand side of the tractor in front of the exhaust where the Steering Valve will be installed.

Figure 2-5 Steering Valve Installation Area



2. Remove the bolts on the back of the valve using a $\frac{1}{2}$ " socket and ratchet.

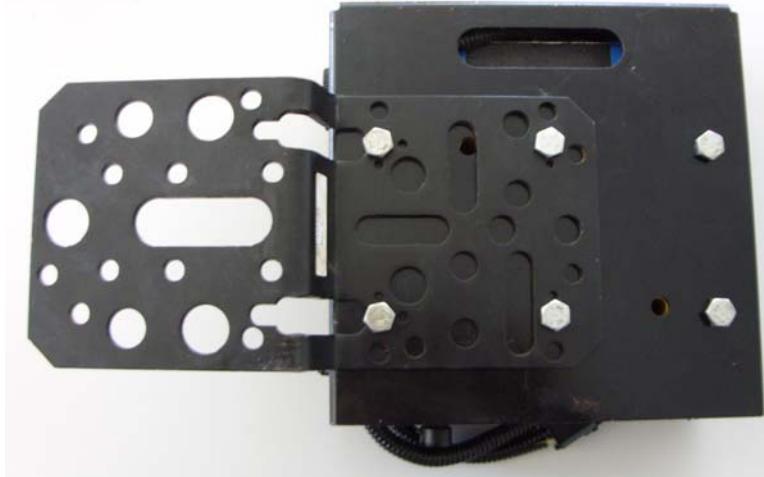
Figure 2-6 Remove Bolts



Install the Steering Valve Bracket

3. Attach the Steering Valve to the bracket as shown and replace bolts shown in *Figure 2-7*.

Figure 2-7 Attach Steering Valve to Bracket



4. Place valve and bracket on the right hand side of the vehicle and place 2 washers and 2 bolts through the existing holes. Place two washers and 2 nuts on the other side of the bolts and tighten using a 24mm socket and ratchet and wrench.

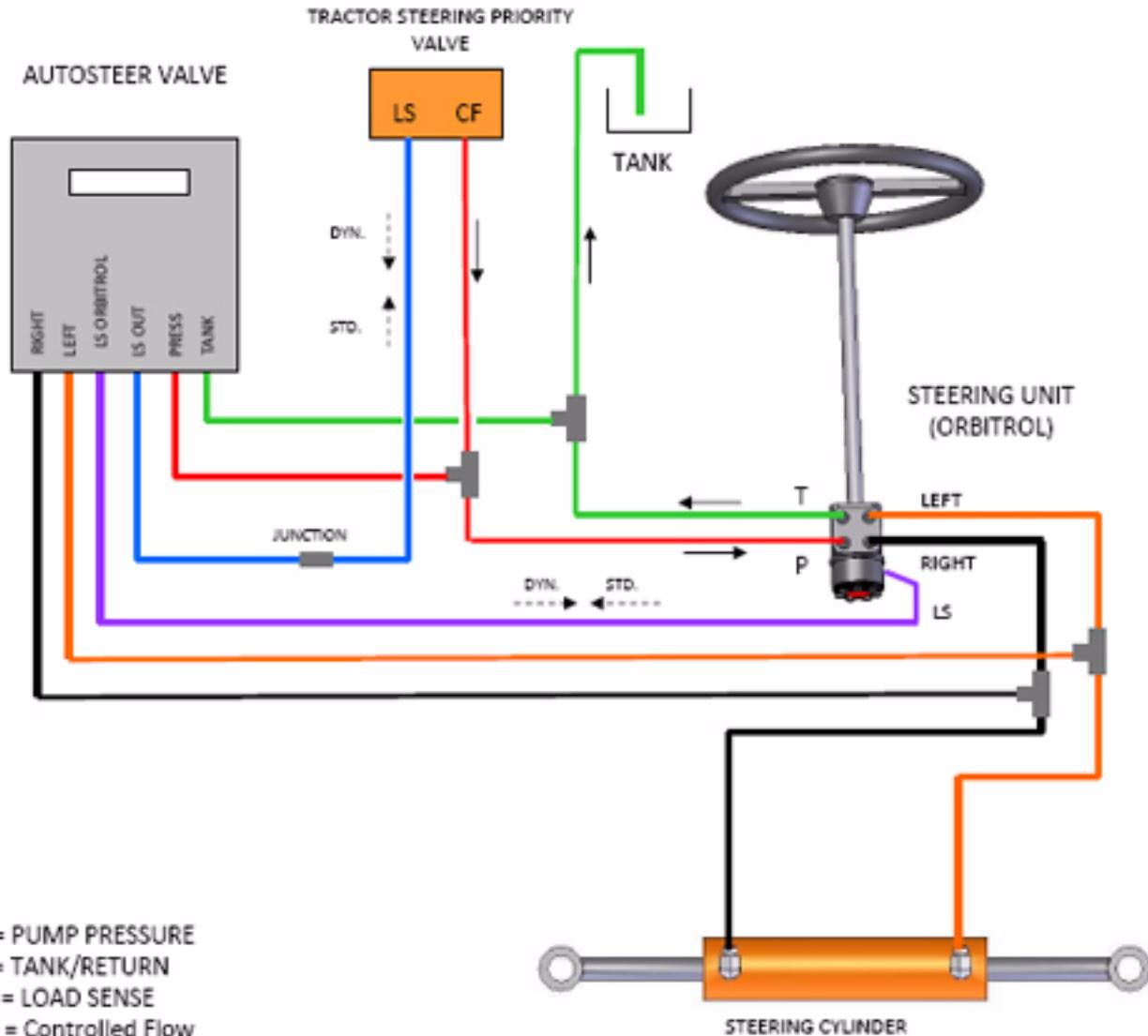
Figure 2-8 Mounted Valve



Hydraulic Hose Connection Procedures

Figure 2-9 shows the hydraulic connections after installation. Refer to this diagram as you are connecting the hydraulic components.

Figure 2-9 Hydraulic Hose Connection Diagram



1. Open hood and locate the area in front of the steering orbitrol.
2. Remove the steel plate with the hood latches on it. This is done by removing the four nuts using a 5/8" socket and ratchet and wrench.

Figure 2-10 Remove Steel Plate



3. The diagram in *Figure 2-11* shows an overview of the tank and pressure line connections described in the steps that follow. Item descriptions are listed in *Table 2-3*.

Figure 2-11 Tank and Pressure Line Overview

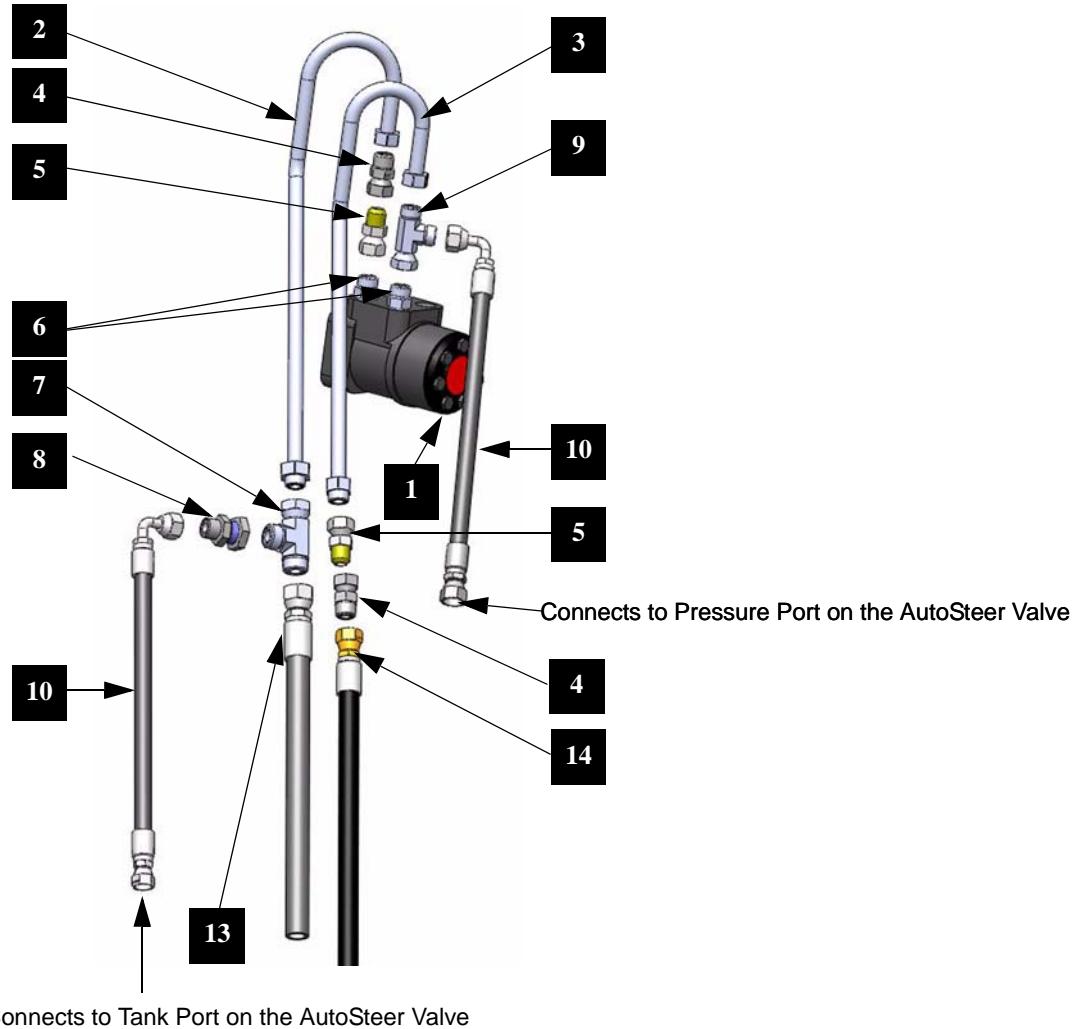


Table 2-3 Item Descriptions

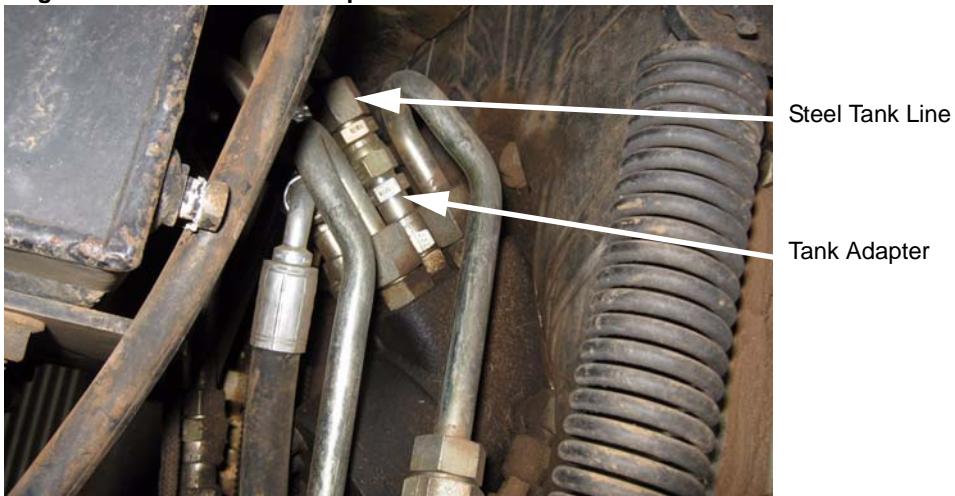
Item	Description
1.	Orbitrol
2.	Steel Tank Line
3.	Steel Pressure Line
4.	ADAPTER -8F JIC X -8M ORFS
5.	ADAPTER -8F ORFS X -8M JIC

Item	Description
6.	Orbitrol Port 13/16 ORFS M
7.	Adapter Run Tee 10 R6LO-S
8.	Adapter Expander 10-8 LOHL6-S
9.	Adapter Run Tee 8 R6LO-S
10.	Hose Assembly 3/8" x 62"
11.	Hose Assembly 3/8" x 69"
12.	Vehicle Pressure Hose
13.	Vehicle Tank Hose

4. Remove the steel tank line at the orbitrol and at the other end where it joins onto a rubber hose. Next, fit the spacer/adapter onto the orbitrol and then replace the steel hose onto it. The spacer/adapter is made up of two fittings joined together to create a spacer - the fittings used are a ORFS (female) to JIC (male) converter and a JIC (female) to ORFS (male) converter. See *Figure 2-12*.

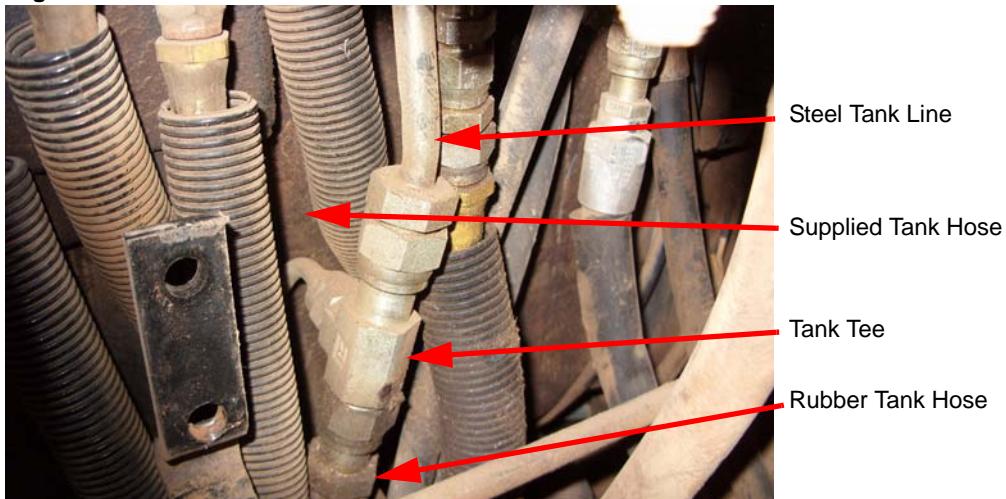
Note: The wrong hose connections on the Tank Port will prevent correct Relief Valve operation.

Figure 2-12 Attach Tank Adapter



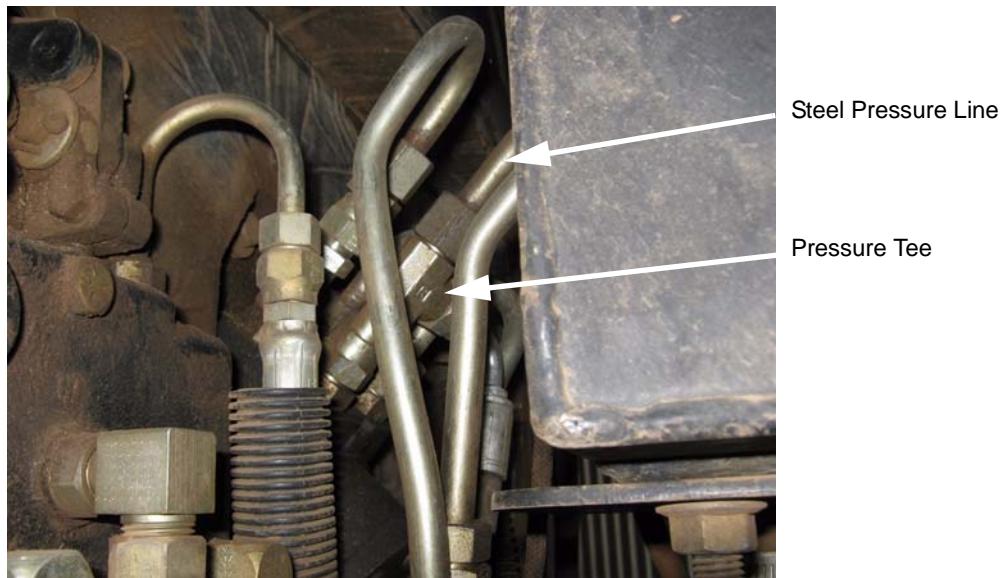
5. The other side of the steel tank line can now be reconnected by inserting a run tee between steel line and the rubber hose. Connect the Supplied tank hose onto the other side of the tee using the supplied reducer. See *Figure 2-13*.

Figure 2-13 Connect the Tank Hose



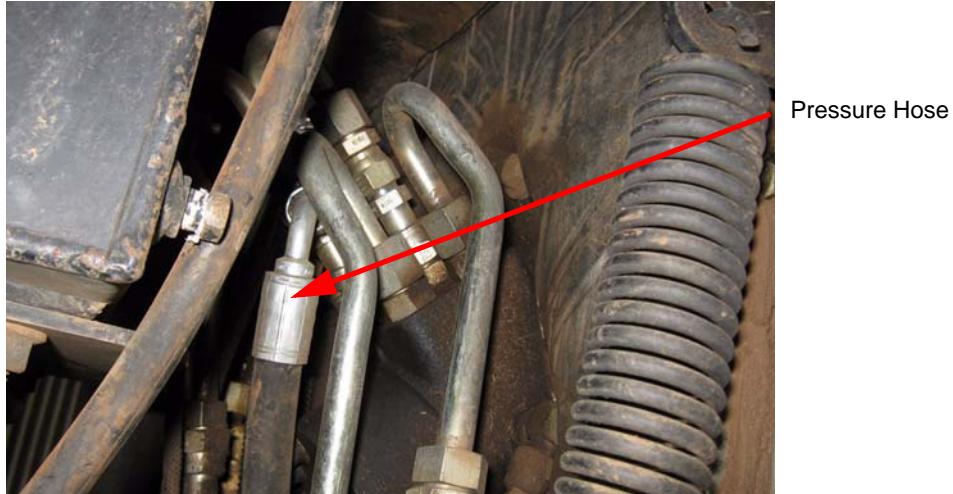
6. Remove the steel Pressure line at the orbitrol and at the other end where it joins onto a rubber hose. Next, fit the tee onto the orbitrol, and then replace the steel pipe onto the tee. See *Figure 2-14*.

Figure 2-14 Attach Tank Adapter



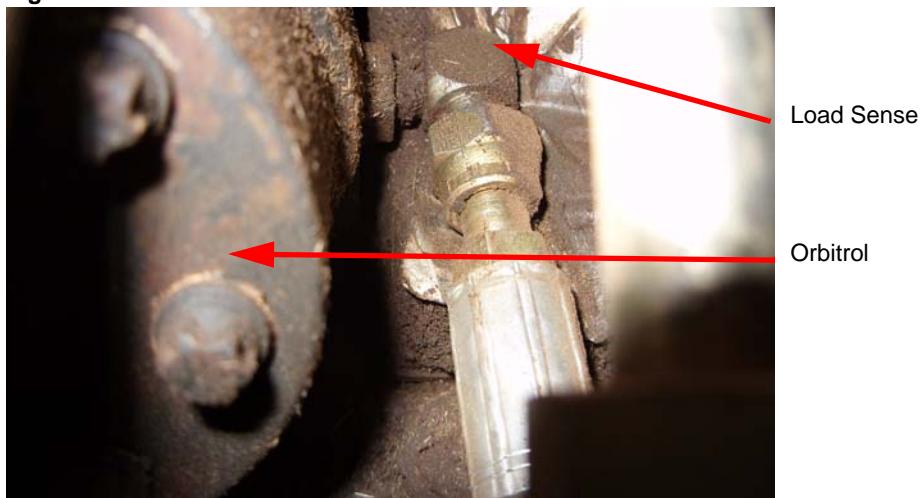
7. The other side of the steel tank line can now be reconnected by inserting an adapter as a spacer. The spacer is made up of two fittings joined together to create a spacer - the fittings used are a ORFS (female) to JIC (male) converter and a JIC (female) to ORFS (male) converter. Connect the supplied Pressure hose on to the other side of the tee and route the hose down to the front right hand side of the cab. See *Figure 2-15*.

Figure 2-15 Connect the Pressure Hose



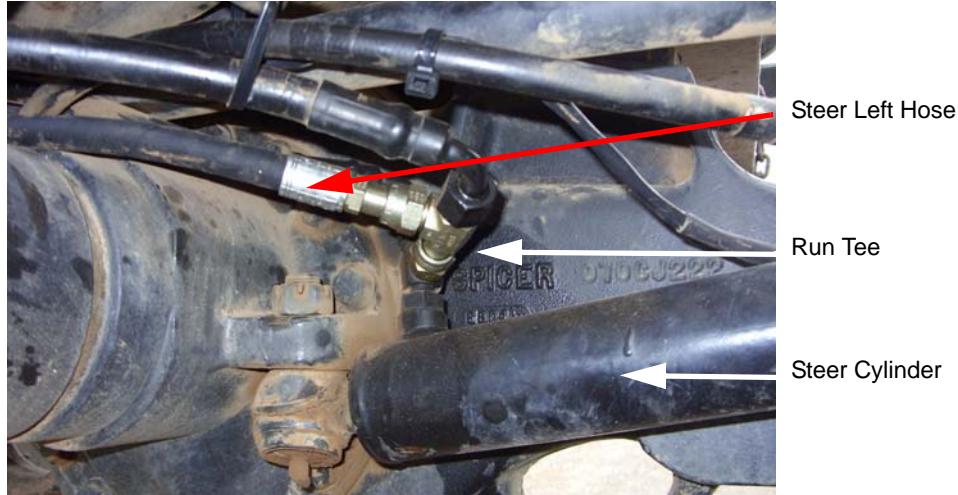
8. Remove the load sense line from the load sense port of the orbitrol, and then connect the line to the supplied "LS out" hose. Next, connect the supplied "LS in" hose to the load sense port on the orbitrol. See *Figure 2-16*.

Figure 2-16 Attach Load Sense



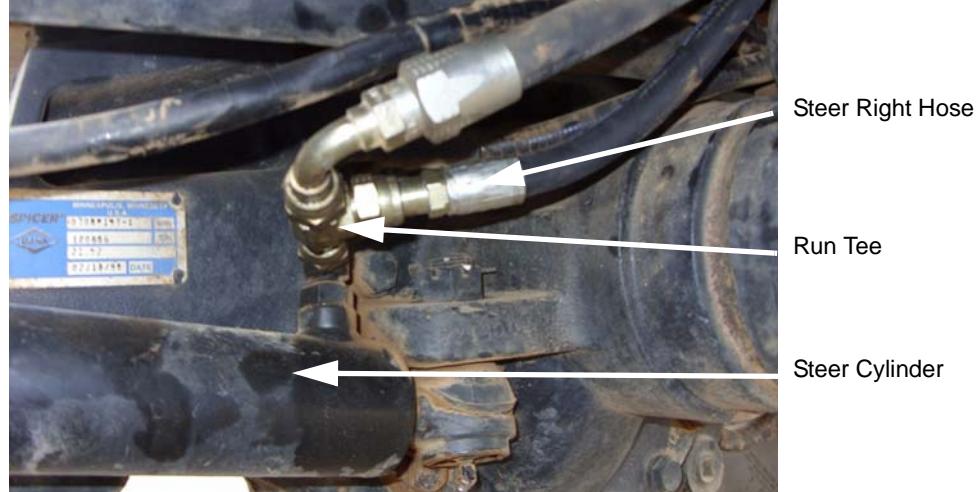
9. Install a run tee onto the steer cylinder on the right side of the tractor. Fit the supplied "steer left" hose onto the tee. See *Figure 2-17*.

Figure 2-17 Install Steer Left Hose



10. Install a run tee onto the steer cylinder on the Left side of the tractor. Fit the supplied "Steer Right" hose onto the tee. See *Figure 2-18*.

Figure 2-18 Install Steer Right Hose



11. Ensure that the o-ring is in place. See *Figure 2-19*.

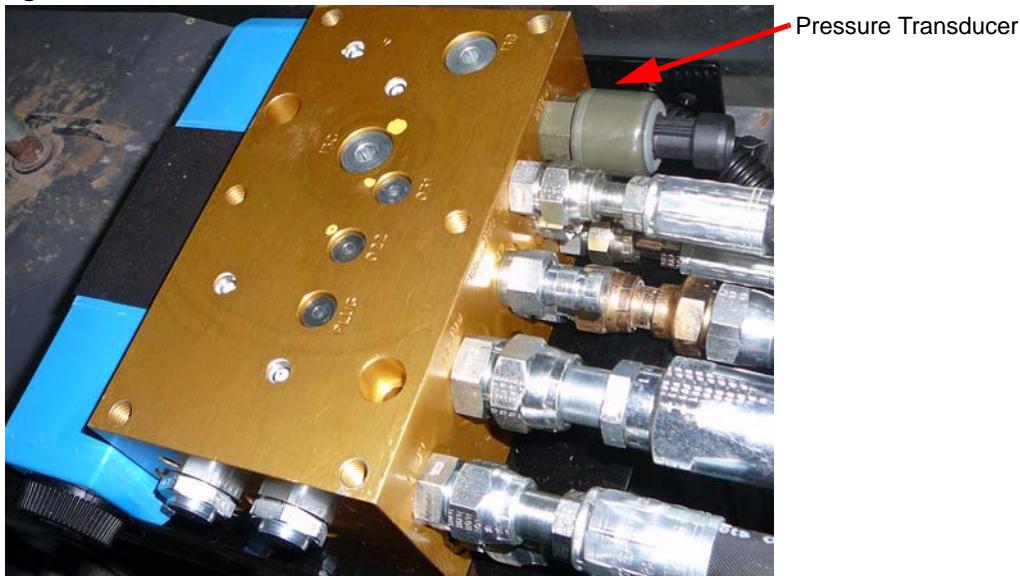
Note: Oil leakage will occur if an o-ring is not installed.

Figure 2-19 O-Ring



12. Screw the Pressure Transducer into the Steering Valve and tighten with a 3/4" wrench. See *Figure 2-20*.

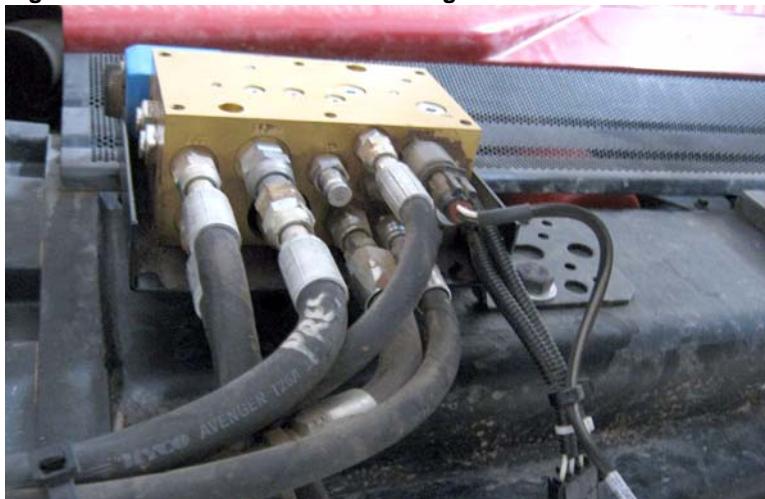
Figure 2-20 Install Pressure Transducer



13. Route the hoses neatly to the AutoSteer valve and secure them using cable ties. See *Figure 2-13*.

- a. Remove valve cover by removing four screws using a 3/16 allen wrench.
- b. Connect each hose to its correct port.
- c. Tighten all the hydraulic hose fittings on each hose end.
- d. Install the threaded pressure transducer into the port identified as TRANS.
- e. Tighten the pressure transducer using a 3/4 inch wrench.
- f. Replace the AutoSteer Valve cover.
- g. Insert and tighten the cover screws.

Figure 2-21 Connect Hoses to Steering Valve



- 14.** Double check all hose connections and confirm that they are connected correctly at both ends. It is very important that the Tank hose be correctly connected to allow proper operation of the AutoFarm LS relief valve. Refer to *Figure 2-9*.
- 15.** Tighten all hose connections at both ends.
- 16.** Turn on the engine momentarily (3-4 seconds) then turn off the engine.
- 17.** Check for oil leaks
- 18.** Turn the engine on long enough to enable you to turn the steering wheel one turn right and one turn left.
- 19.** Turn the Engine off.
- 20.** Check for oil leaks.

Steering Valve Installation Checklist

- 1.** Valve Bracket bolt is tight.
- 2.** Mounting screws that secure the Steering Valve are tight.
- 3.** Pressure Hose is connected to correct port on Steering Valve and Orbitrol.
- 4.** Tank Hose connected to correct port on Steering Valve and Orbitrol.
- 5.** LS-OUT hose connected to correct port on Steering Valve and LS hose on tractor.
- 6.** LS ORBITROL hose connected to correct port on Steering Valve and Orbitrol.
- 7.** Right Steer Hose connected correctly at both ends.
- 8.** Left Steer Hose connected correctly at both ends.
- 9.** Pressure Transducer installed and tight.
- 10.** Checked that all hose fittings are tight.
- 11.** Checked hose routing and cable ties on all hoses.
- 12.** 5000psi pressure gauge is installed on the Steering Valve test port.

Wheel Angle Sensor (WAS) Installation

This **Wheel Angle Sensor Installation** chapter information is provided in the following sections:

- *Installing Mounting Brackets*
- *Cut the Wheel Angle Sensor Rods to Length*
- *Assemble the Linkage Rod Hardware*
- *Attach the Wheel Angle Sensor Rods to Brackets and Adjust*

Note: The Wheel Angle Sensor is optional equipment and is not provided with the installation kit. The Wheel Angle Sensor installation instructions are provided for special installations, when required.

Installing Mounting Brackets

1. Identify the wheel angle sensor mounting location on the front right steering axle. See *Figure 3-1*.

Figure 3-1 Wheel Angle Sensor Mounting Location



2. Remove the two bolts that retain the bump stop using a 19mm wrench. See *Figure 3-2*.

Figure 3-2 Remove Two Bolts



3. Attach the wheel angle sensor bracket as shown in *Figure 3-3*. Replace the two bolts and tighten using a 19mm wrench.

Figure 3-3 Attach Wheel Angle Sensor Bracket



4. Orient the wheel angle sensor as shown in *Figure 3-4*. The plug is facing the front of the vehicle.
5. Attach wheel angle sensor to bracket. Tighten bolts with a 9/16" socket and ratchet.

Figure 3-4 Attach Wheel Angle Sensor to Bracket



6. Remove the two bolts from the wheel hub using a 19mm socket and ratchet as shown in *Figure 3-5*.

Note: If a mudflap is installed remove the mudflap by removing the 4 retaining bolts. Use caution removing the mudflap as it is heavy and may require two people to remove it.

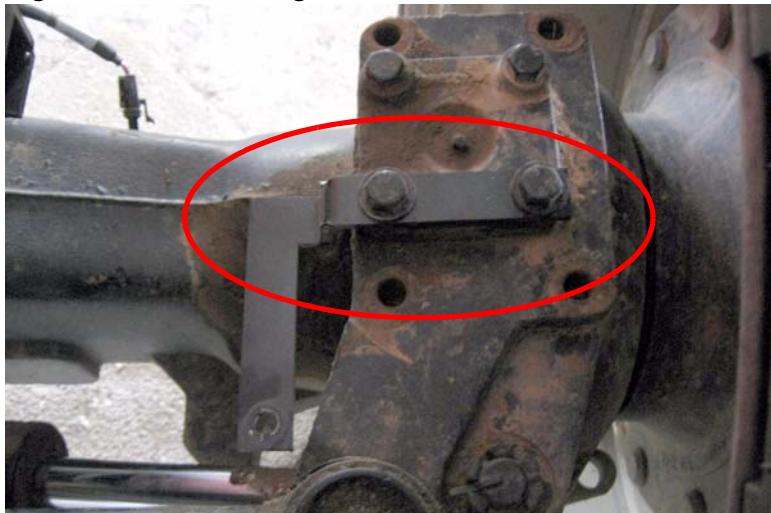
Figure 3-5 Remove Bolts from Wheel Hub



Cut the Wheel Angle Sensor Rods to Length

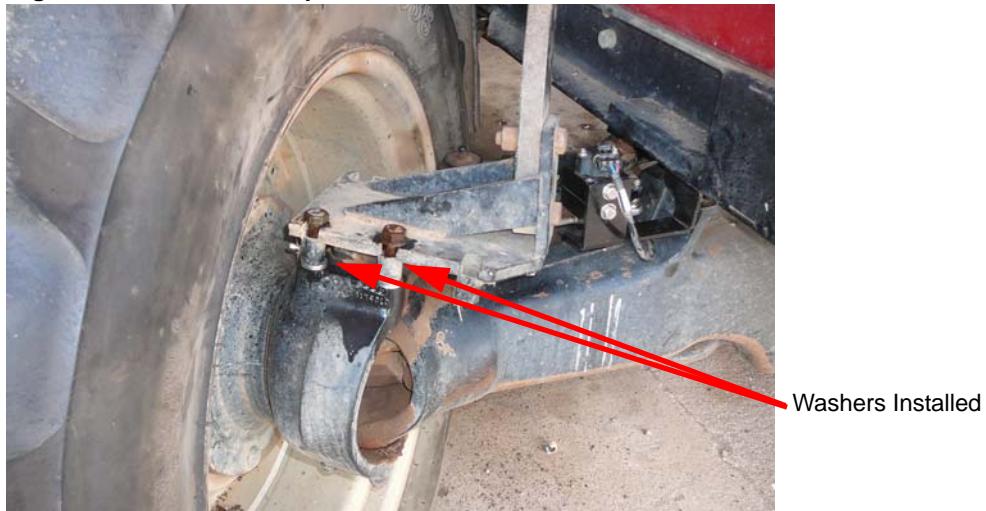
7. Install the linkage bracket as shown in *Figure 3-6*, re-insert the bolts and tighten using a 19mm socket and ratchet.

Figure 3-6 Install Linkage Bracket



8. Refit mud flap if previously removed, with the addition of a 2 washers on each bolt between the hub and the mud flap to space it above the linkage bracket as shown in figure *Figure 3-7*.

Figure 3-7 Refit Mud Flap



Cut the Wheel Angle Sensor Rods to Length

The Wheel Angle Sensor rods are shipped longer than they need to be. These rods must be cut to the proper length to allow the linkage rods to provide the Wheel Angle Sensor the maximum number of counts as the steering wheel is turned from full right to full left. Due to the variability of the possible mounting positions and axle options, it is left to the installer to verify the correct length for each individual installation and to cut the rods to length.

Table 3-1 provides the typical rod lengths that work for most installations. Before cutting the linkage rods to these measurements, verify that the Wheel Angle Sensor brackets can attach to the vehicle as shown in this manual and that they are

attached the correct distance from any reference points shown. If the axle does not allow the Wheel Angle Sensor brackets to be installed as shown, do not cut the rods until it is determined what the proper lengths are for your installation. Due to possible variations in the mounting positions, these measurements could be different. These measurements are provided as a reference only. The installer is responsible for verifying that the provided measurements will work prior to cutting the rods.

Use a metal hack saw and vice, as shown in *Figure 3-9*, to cut the Wheel Angle Sensor linkage rods to the proper lengths.

Note: It is advisable to attach a nut on the side of the metal rod that is going to be cut in order to clean the threads after the cut has been made.

Protect the threads from damage while cutting the rods. *Figure 3-8* shows where the measurements provided in *Table 3-1* are measured from.

Table 3-1 Linkage Rod Cut Lengths

Item	Length
Rod A	4.9 inches (125mm)
Rod B	6.5 inches 165mm

Figure 3-8 Linkage Rod Cut Length Measurement Points

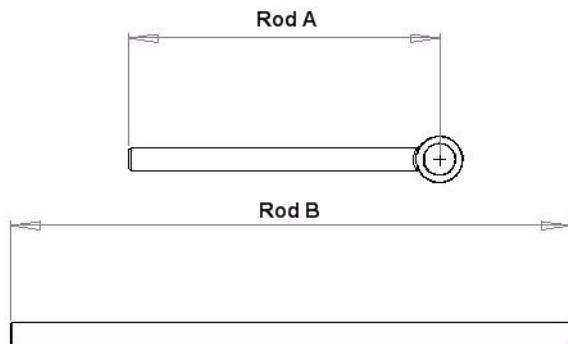
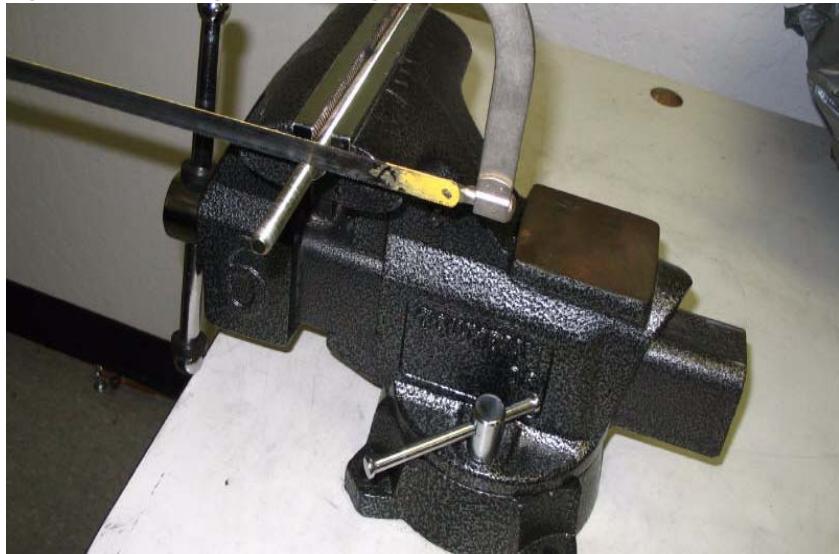


Figure 3-9 Linkage Rod Cutting

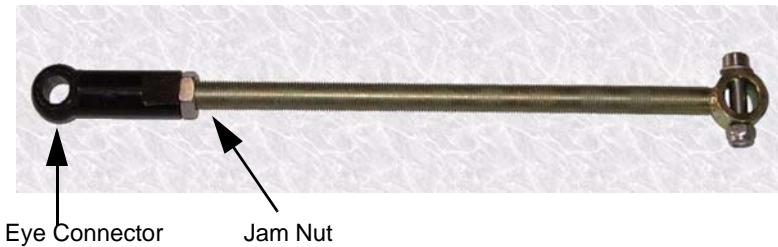


Note: The “after-assembly” center-to-center lengths of each linkage rod are shown in *Table 3-2*. *Figure 3-12* shows the measurement points for the assembled linkage rods.

Assemble the Linkage Rod Hardware

1. Attach a jam nut to the end of Rod A.
2. Connect the eye connector to the end of the Wheel Angle Sensor rod as shown in *Figure 3-10*.

Figure 3-10 Rod A Assembled

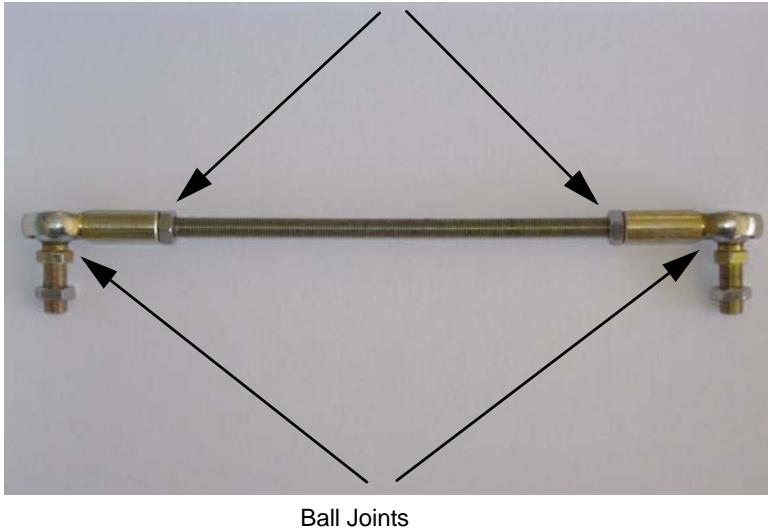


3. Attach the jam nuts to each end of the linkage Rod B.
4. Attach the ball joints to both ends of the linkage rod as shown in *Figure 3-11*.

Note: The bolts for the ball joints should be facing the same direction as shown in *Figure 3-11* for this installation.

Figure 3-11 Linkage Rod Assembled

Jam Nuts

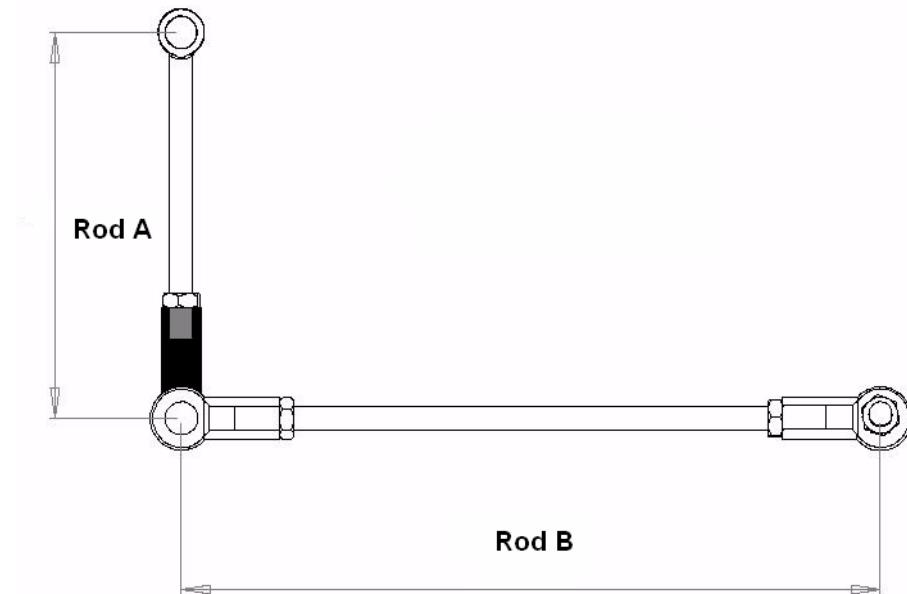


5. For most installations, use *Table 3-2* to adjust the lengths of the rod assemblies to the values shown. *Figure 3-12* shows where the measurement points for each rod are taken. Due to the variation of axle types and installation points, these measurements are provided as a reference only. Before connecting the steering rods and turning the steering axle verify that these lengths will work and the sensor will not be damaged.

Table 3-2 Assembled Linkage Rod Length

Item	Length
Rod A	6.1 inches (155mm)
Rod B	8.3 inches (211mm)

Figure 3-12 Assembled Linkage Rod Measurement Points

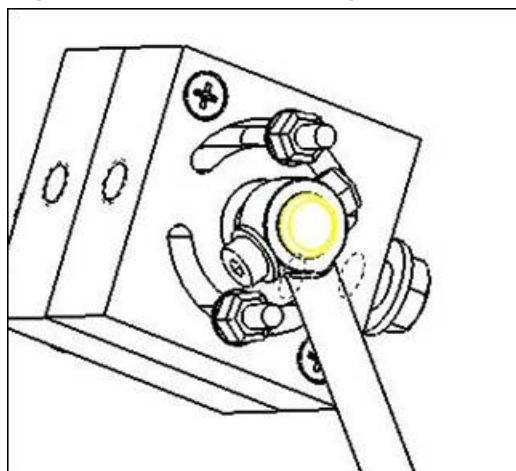


Attach the Wheel Angle Sensor Rods to Brackets and Adjust

1. Attach the Wheel Angle Sensor rod to the Wheel Angle Sensor. See *Figure 3-13*. Tighten the Wheel Angle Sensor rod with a 3/8" wrench and 1/8" Allen wrench.

Note: The rod should aim toward the rear of the vehicle.

Figure 3-13 Attach Wheel Angle Sensor Rod to Sensor



Note: The flat washer goes on the bolt head side and NOT the nut side when attaching the linkage rod. See *Figure 3-14*.

Figure 3-14 Place the Washer on Bolt Head Side

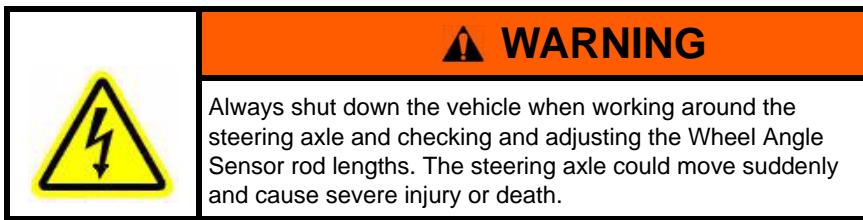


2. Attach the linkage rod to the linkage bracket and tighten the ball joint to the bracket with a 1/2" and 9/16" wrench. See *Figure 3-15*.

Note: Do not attach linkage rod to wheel angle sensor rod at this time.

Figure 3-15 Tighten Wheel Angle Sensor Rod Connection



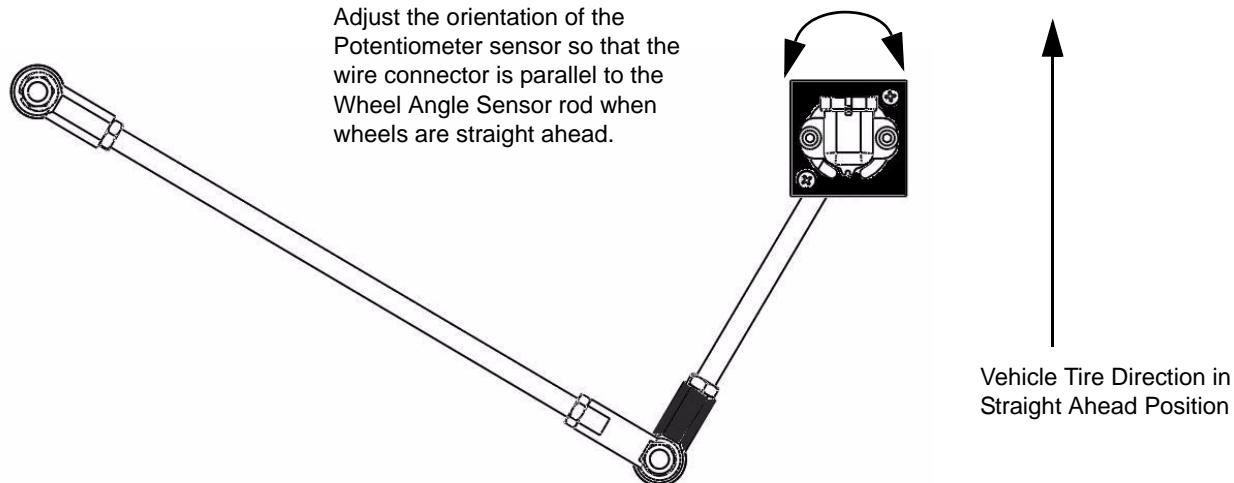


Note: Never attach the linkage rods to Wheel Angle Sensor rod and turn the steering wheels manually or automatically until the fit has been verified. The linkage rods must remain apart while the steering wheels are turned to the maximum right and left positions and then temporarily attached at these positions. Failure to do this may cause the Wheel Angle Sensor or vehicle to become damaged.

Note: After the linkage rods are assembled in the following steps, they should move freely without touching any other parts and without overextending. Make any necessary adjustments to the linkage rods if there is an interference problem.

3. With the linkage rods disconnected, manually turn the steering wheel so that the wheels are centered (the vehicle will travel straight ahead when moving).
4. Temporarily attach the linkage rods.
5. Rotate the Wheel Angle Sensor potentiometer on top of the mounting block so that the plastic wire connector is parallel to the Wheel Angle Sensor rod. See *Figure 3-16*.

Figure 3-16 Adjust Potentiometer Angle to Match Straight Ahead



6. After the potentiometer has been adjusted, tighten the potentiometer bolts with a 3/8" wrench and 5/32" Allen wrench.
7. Disconnect the linkage rods and turn the steering wheel manually to the full left position.
8. Reattach the linkage assembly and verify that the sensor or rods will not be damaged. Adjust the rod lengths as necessary. See *Figure 3-17*.

Figure 3-17 Full Left Position



9. Disconnect the linkage rods and turn the steering wheel manually to the full right position.
10. Reattach the linkage assembly and verify that the sensor or rods will not be damaged. Adjust the rod lengths as necessary. See *Figure 3-18*.

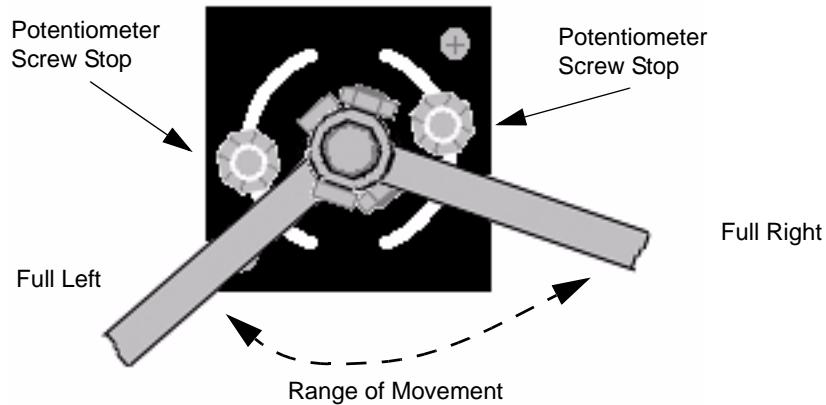
Figure 3-18 Full Right Position



11. Repeat Step 3 through Step 10 until the rod lengths have been adjusted and the potentiometer is centered to get the maximum sensor movement. The maximum movement is reached when the Wheel Angle Sensor rod will sweep from approximately 3/16 inch (5mm) from both bolt heads holding the potentiometer on to the block when the wheels are turned to the maximum right and left positions. See *Figure 3-19*.

Figure 3-19 Maximum Sensor Movement

Wheel Angle Sensor as Seen from the Bottom



Note: An Ohm meter can also be used to determine if there is enough sensor movement. Connect the Ohm meter to pins A and B of the Wheel Angle Sensor. Measure the Ohm reading at the maximum left and right position. After subtracting the smaller number from the larger number, there should be at least a 3.75 kilohms change. The reading should also never go below 1.6 or higher than 6.6 kilohms as this is reaching the limits of the potentiometer and could damage the sensor.

12. Once all the adjustments are complete, tighten all lock nuts and bolts on the linkage and Wheel Angle Sensor rod. A 1/2" and two 9/16" wrenches are required to tighten all the connections. See *Figure 3-20*.

Figure 3-20 Tighten all Nuts and Bolts



SA Module Installation

The **SA Module Installation** chapter contains information in the following sections:

- *SA Module Mounting Orientation*
- *Mount the SA Module*

SA Module Mounting Orientation

The SA Module can also only be mounted in certain orientations. *Figure 4-1* shows the correct mounting positions and *Figure 4-2* shows incorrect mounting positions.

Figure 4-1 Correct SA Module Mounting Orientations

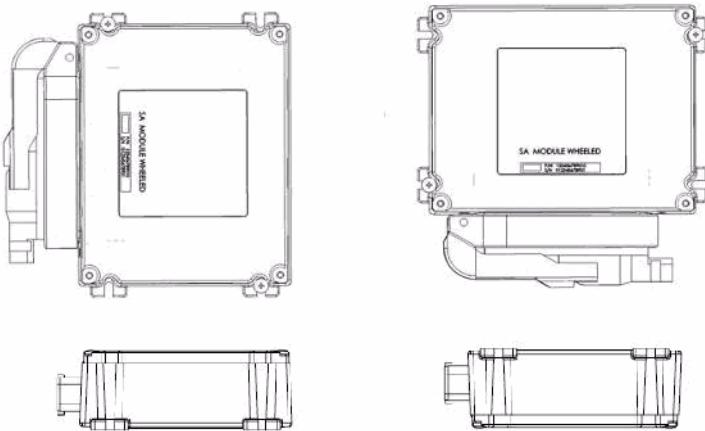
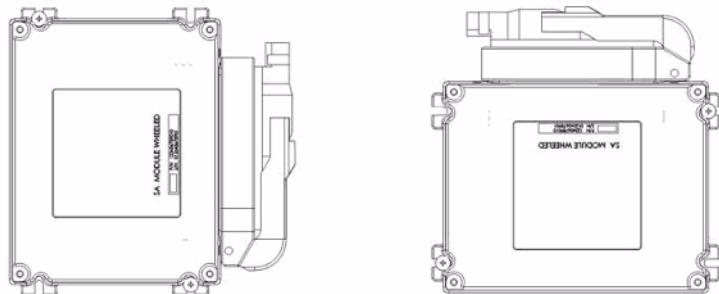


Figure 4-2 Incorrect SA Module Mounting Orientations



Mount the SA Module

Due to the variety of options available on vehicles and the possible configuration differences, it may be necessary to install the SA Module in a location other than the example shown here. If an alternative location is required, choose a location where the SA Module can be protected from damage caused by moving parts or crop debris and excessive moisture from weather and cleaning equipment.

The recommended mounting location is to install the SA Module under the cab as follows.

1. Prepare the SA Module Bracket for installation by attaching two screws on the “L” bracket side of the bracket. See *Figure 4-3*.

Note: Do not tighten screws. Allow room for the SA Module to fit beneath them in a later step.

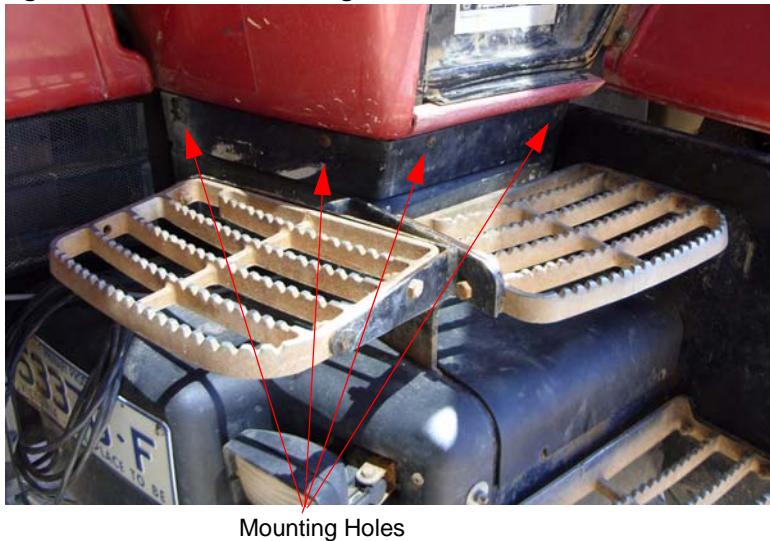
Figure 4-3 Attach Screws to Bracket “L”-side



2. Identify the area under the left stairs and remove the four screws as shown in *Figure 4-4*.

Note: Alternative mounting locations can be used if the location shown is not available.

Figure 4-4 Remove Retaining Screws



3. Remove the panel as shown in *Figure 4-5*.

Figure 4-5 Remove the Panel



Mount the SA Module

4. Place the SA Module Bracket as shown and mark two holes. See *Figure 4-6*.

Figure 4-6 Place SA Module Bracket



5. Remove the SA Module Bracket and drill two 10mm holes. See *Figure 4-7*.

Figure 4-7 Drill Mounting Holes



6. Place the SA Module Bracket as shown in *Figure 4-8* and insert 2 bolts though the bracket and hole. Place a washer followed by a nut on the back side of the bolt. Tighten with a 9/16" ratchet and socket on one side and a wrench on the other.

Figure 4-8 Mount the SA Module Bracket



7. Slide the SA Module into place. Mount it by installing the other two screws and tighten all four with a #2 Phillips screwdriver. See *Figure 4-9*.

Figure 4-9 Slide SA Module into Place



8. Leave the panel under the steps off until the SA Module harness is connected.

Mount the SA Module

Roof Module Installation

This **Roof Module Installation** chapter contains information in the following sections:

- *Safety Notes*
- *Roof Rail Installation*

Safety Notes

- The AutoSteer system must be powered OFF when installing or removing the Roof Module.
- The Roof Module must always be firmly secured to the Roof Rail using the hardware whenever the vehicle is in operation to prevent the Roof Module from releasing from its bracket and falling.
- The Roof Module must be removed when transporting the vehicle at speeds above 30 mph (48 km/h).
- Ensure you are in a stable position on the vehicle or ladder when removing the Roof Module, so that you do not fall or drop the Roof Module.
- Use a ladder to install the Roof Rail.



Roof Rail Installation

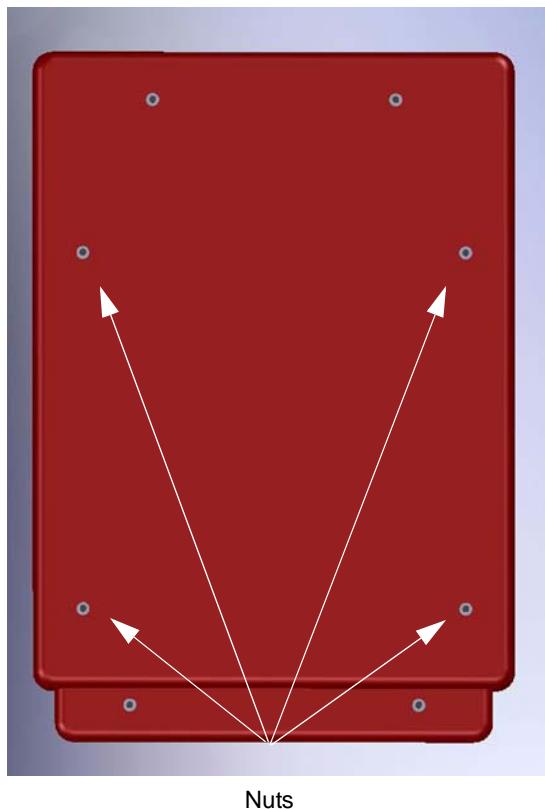
1. Place the ladder as close as possible to the side of the cab.

Note: The ladder is necessary to install the Roof Rail and Roof Module.

2. Locate the four nuts on the roof cab as shown in *Figure 5-1*.
3. Remove the four nuts with a 7/16" socket and ratchet.

Figure 5-1 Mounting Bolt Locations

Front of Vehicle



4. Place and orient the Roof Rail Brackets as shown in *Figure 5-2*. Attach the Roof Rail Brackets by replacing the washer and nut. Tighten securely with a 7/16" socket and ratchet.

Figure 5-2 Orienting the Roof Rail Brackets



5. Attach the Roof Rail using the bolts, nuts and washers supplied. Tighten securely with a 15/16" socket and ratchet. See *Figure 5-3*.

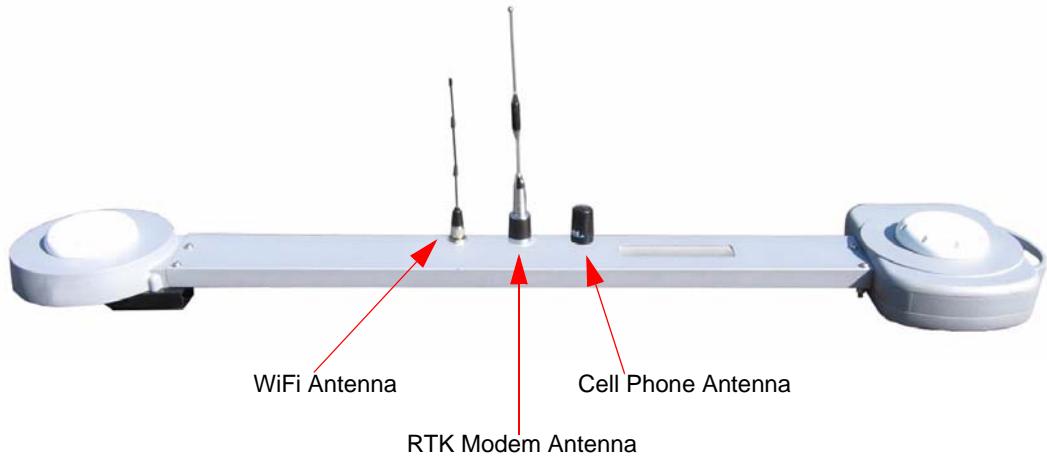
Figure 5-3 Attach the Roof Rail



6. Attach the three antennas to the proper Roof Module antenna connections. See *Figure 5-4*.

Note: Hand tighten the connections. Do not over tighten.

Figure 5-4 Attach the Antennas



7. Remove the Locking Pin from the Roof Rail. See *Figure 5-5*.

Figure 5-5 Remove Locking Pin



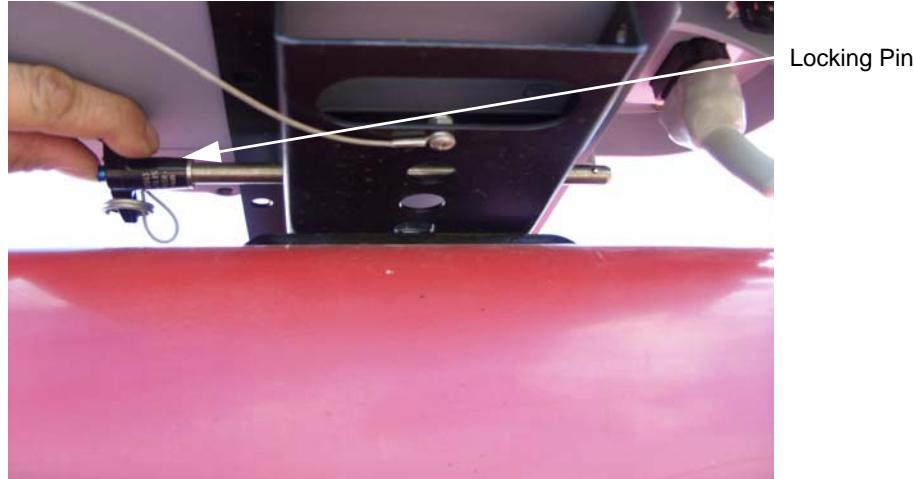
8. Place the Roof Module on the Roof Rail. See *Figure 5-6*.

Figure 5-6 Attach Roof Module



9. Reinsert the Locking Pin into the Roof Rail. See *Figure 5-7*.

Figure 5-7 Reinsert Locking Pin



Note: The Locking Pin can be inserted from either side of the Roof Rail.

Display Installation

This **Display Installation** chapter contains information for installing and adjusting the Display in the following sections:

- *Introduction*
- *Installation Procedure*

Introduction

This chapter provides the instructions for installing the RAM Mount Ball in the cab so that the Display can be attached later. Refer to your Display user manual for instructions on installing the Display.

Installation Procedure

1. Locate the front pillar on the right side of the cab. See *Figure 6-1*.

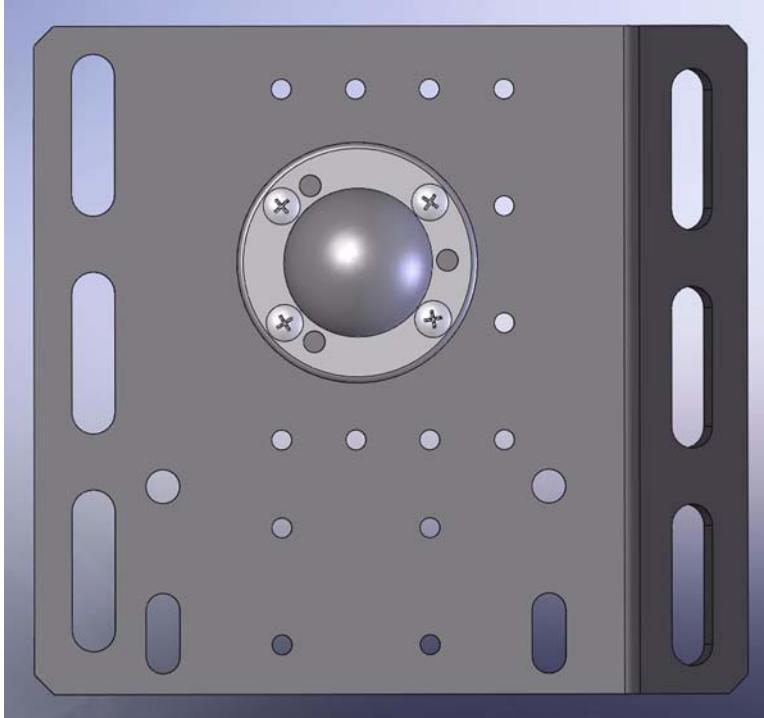
Note: Alternative mounting locations can be used if the location shown is not available.

Figure 6-1 Locate the Front Pillar



2. Attach the Ram Ball Mount to mounting bracket using the four screws and lock nuts provided as shown in *Figure 6-2*. Tighten using a 3/8" wrench and #2 Philips screwdriver.

Figure 6-2 Attach RAM Ball to Mounting Bracket



3. Attach the monitor bracket to the pillar by inserting a bolt through a washer and then through the bracket as shown in *Figure 6-3*. Place a washer and nut on the other side of the bolt, and repeat for other hole. Tighten the bolts with a 13mm socket and ratchet and a 13mm wrench.

Figure 6-3 Attach Monitor Bracket to the Pillar



Note: Refer to the Display user manual for the remaining Display-specific installation instructions.

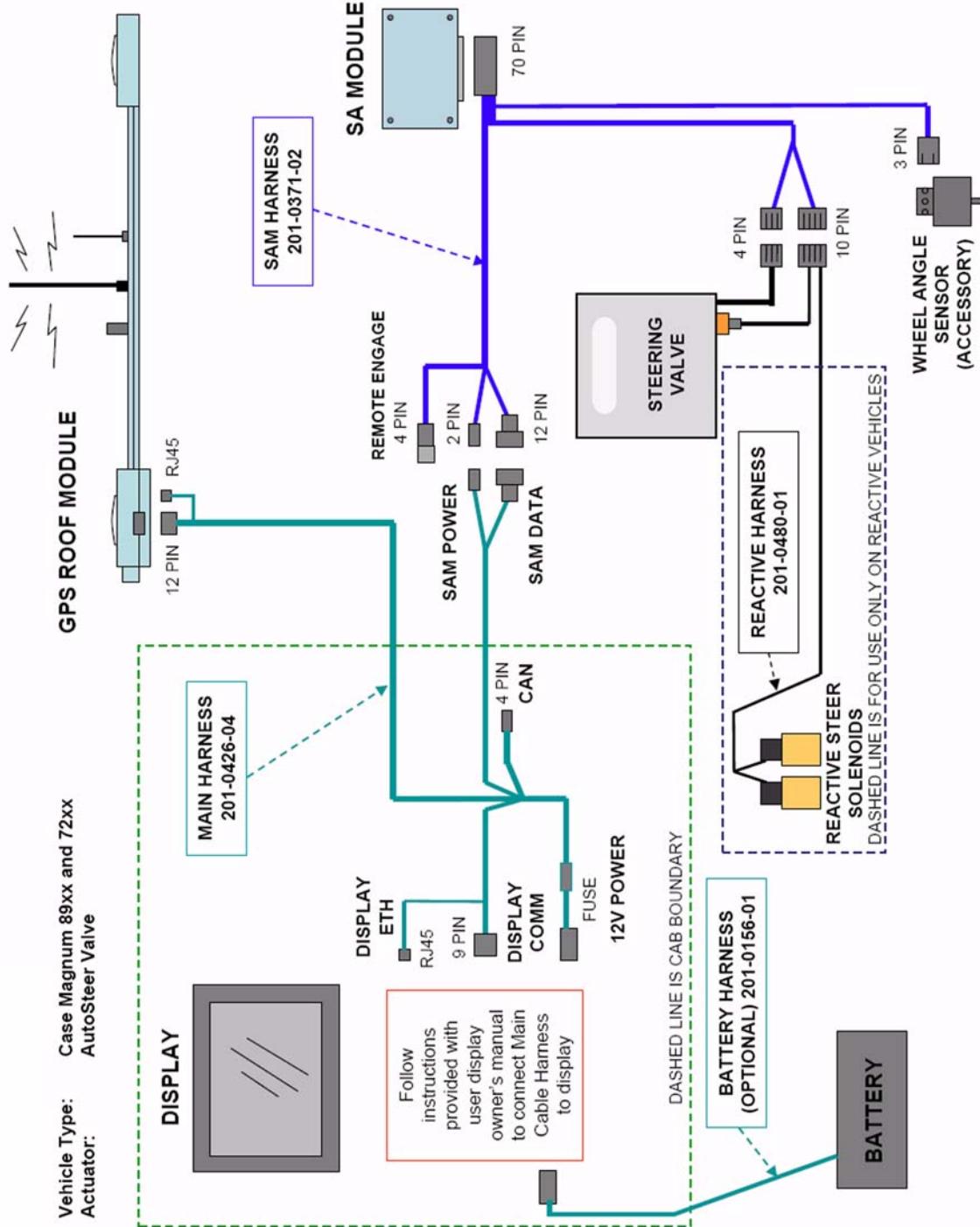
Connecting System Cables

This **Connecting System Cables** chapter provides information for connecting the Main Cable Harness and the SA Module Cable Harness to the various vehicle and AutoSteer components in the following sections:

- *Cable Diagram*
- *SA Module Harness*
 - *SA Module Connection*
 - *Wheel Angle Sensor Connection*
 - *Steering Valve Connection*
- *Main Cable Harness*
 - *Roof Module*
 - *Main Cable Harness Connections Inside Cab*
 - *SA Module Harness*
- *Power Supply Connection*
 - *Cab Power Connection*
 - *Battery Power Connection*
- *Install Warning Label*

Cable Diagram

Refer to the cable diagram for cable connections.



SA Module Harness

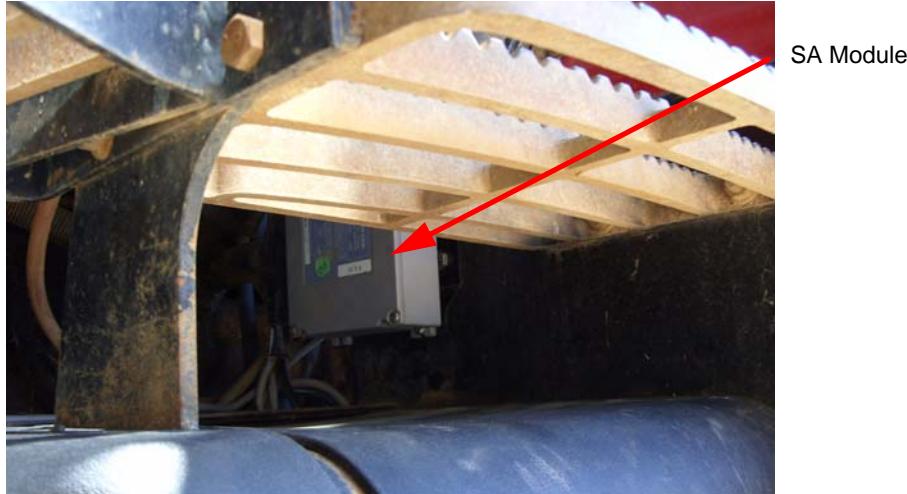
This **SA Module Harness** section contains the following sub-sections:

- *SA Module Connection*
- *Wheel Angle Sensor Connection*
- *Steering Valve Connection*

SA Module Connection

1. Locate the SA Module, which has already been installed. See *Figure 7-1*.

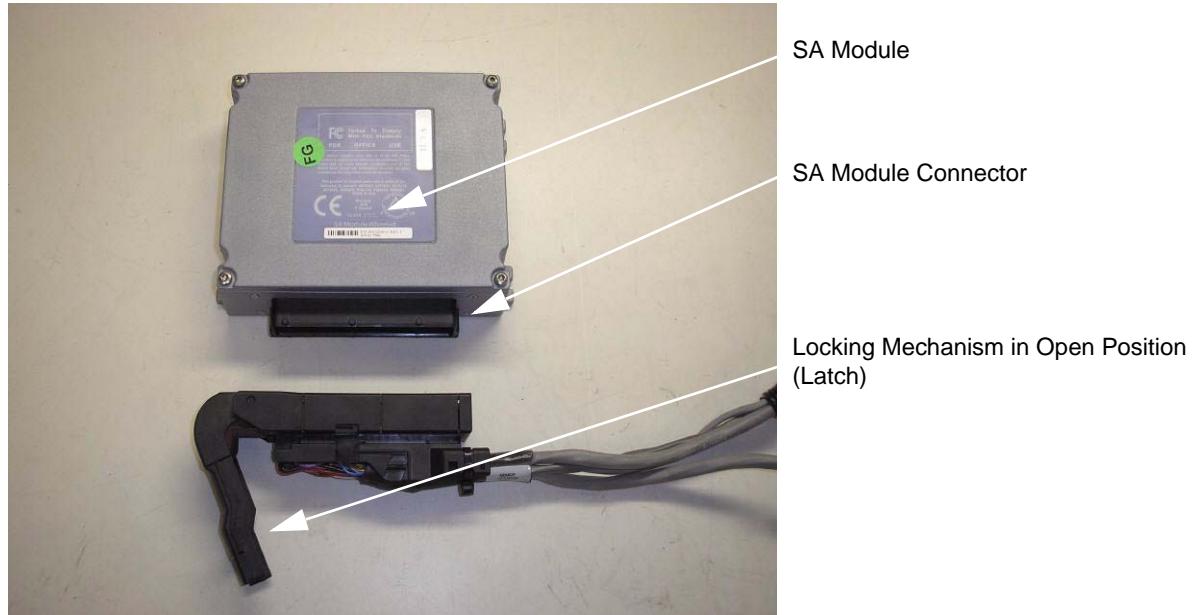
Figure 7-1 Locate the SA Module



2. Align the SA Module Harness connector to the SA Module. See *Figure 7-2*.

3. Open the connector latch lever. See *Figure 7-2*.

Figure 7-2 Connecting SA Module Connector



4. Press the SA Module Harness connector onto the SA Module connector.

Note: You can damage the connectors if you force them into position. Do not force them together or use tools.

5. Press the latch lever closed until it clicks and locks the connector. See *Figure 7-3*.

Figure 7-3 Closing the SA Module Connector



Note: If you need to disconnect the SA Module connector, you must open the latch lever before attempting to pull the connectors apart.

6. Close the cable connector locking mechanism as shown in *Figure 7-4*.

Figure 7-4 SA Module Connector (closed).



Wheel Angle Sensor Connection

Note: This connection to the Wheel Angle Sensor is only required when using the AutoSteer Wheel Angle Sensor.

1. Route the SA Module Wheel Angle Sensor cable to the front right hand side of the tractor where you previously mounted the wheel angle sensor.
2. Attach the SA Module Harness Wheel Angle Sensor connector to the Wheel Angle Sensor. See *Figure 7-5*.

Figure 7-5 Connecting the Wheel Angle Sensor Plug

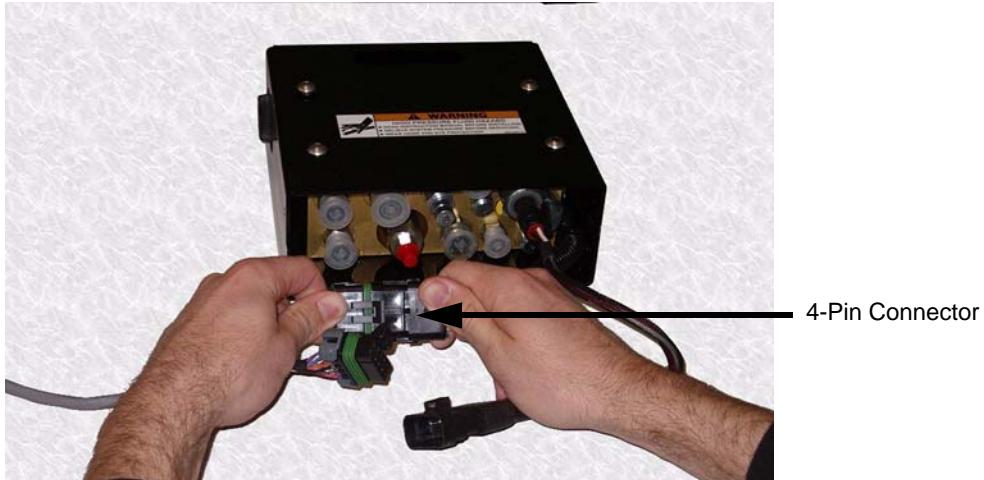


3. Secure all cables with cable ties.

Steering Valve Connection

1. Route and secure the steering cable from the SA Module to the Steering Valve.
2. Connect the 4-pin connector to the Steering Valve. See *Figure 7-6*.

Figure 7-6 Steering Valve Connections (shown on bench)



3. Connect the 10-pin Metripack connector to the Steering Valve 10-Pin connector. See *Figure 7-7*.

Figure 7-7 Steering Valve Connections (shown on bench)



4. Connect the 3-pin connector to the Pressure Transducer on the Steering Valve. See *Figure 7-8*.

Figure 7-8 Steering Valve Connections (shown on bench)



Main Cable Harness

This Main Cable Harness section contains the following sub-sections:

- *Roof Module*
- *Main Cable Harness Connections Inside Cab*
- *SA Module Harness*

Roof Module

1. Attach the Main Cable Harness to the Roof Module. See *Figure 7-9*.

Orient the 12-pin connector so the word “TOP” on the cable connector is pointing upwards (towards the sky). Insert the cable connector into the Roof Module. Push the connector in until it “clicks” and locks in place. To remove, grasp the connector to compress the two side latches and pull away from the Roof Module.

Note: Do not force the connector. If the connector does not engage easily, check for the correct orientation of the connector.

Figure 7-9 **Roof Module Main Cable Harness Connection**



2. Attach the Ethernet connector to the Roof Module. See *Figure 7-10*.

Orient the Ethernet cable connector with the connector under the receiver so the contacts on the cable connector are pointing towards the back of the vehicle. (This will usually be towards your right side if you are standing on the left side of the vehicle and looking towards the Roof Module.) Slide the cable connector into the receiver and rotate the plastic bayonet sleeve clockwise to lock the connector. The bayonet sleeve will “click” when it fully engages and locks. To remove the cable, rotate the bayonet sleeve counterclockwise until it “clicks” and pull the connector down or away from the Roof Module.

Note: Do not force the connector. If the connector does not engage easily, check for the correct orientation of the connector.

Figure 7-10 Roof Module Ethernet Connection



- Route the Main Cable Harness down the right side of the cab, across the back of the cab, and into a grommet which allows access into the cab.

Main Cable Harness Connections Inside Cab

Figure 7-11 shows the Main Cable Harness connections used inside the cab. Table 7-1 shows the functions of the Main Cable Harness cab connectors. Refer to your Display user manual for instructions on connecting the Main Cable Harness connections shown to the correct ports and harnesses on the Display and Display cables.

Figure 7-11 Main Cable Harness Cab Connections

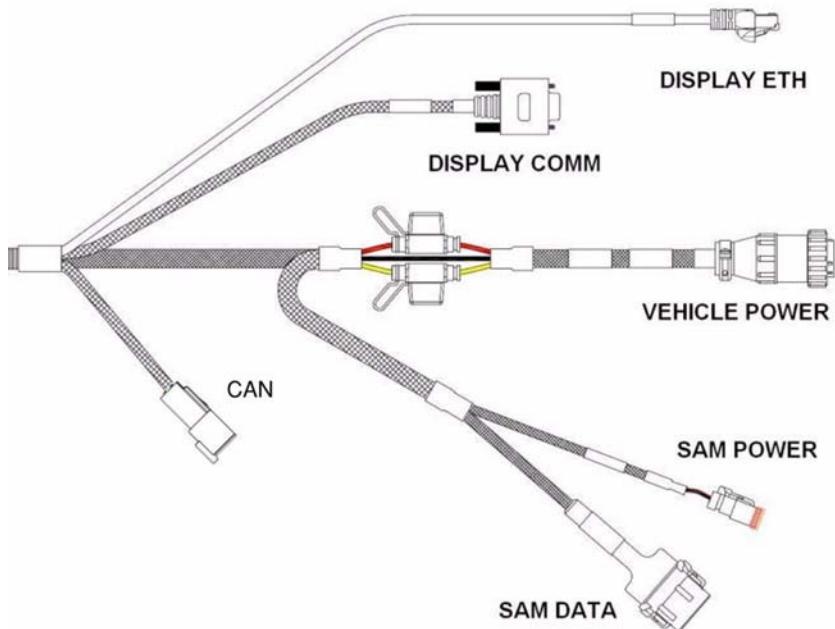


Table 7-1 Cab Main Cable Harness Connector Functions

Main Cable Harness Connector	Connector Function
DISPLAY ETH	Display Ethernet Port (RJ-45)
DISPLAY COMM	Display Communication Port (DB-9)
VEHICLE POWER	12 Volt Power
SAM POWER	Power for SA Module
SAM DATA	Data for SA Module
CAN	Not Used for This Installation

SA Module Harness

1. Connect the 12-pin data and 2-pin power connectors between the Main Cable Harness and the SA Module Harness. See *Figure 7-12*.

Figure 7-12 Connect Main Cable and SA Module Harnesses



2. Replace the cover under the left-hand stairs that was removed to install the SA Module.

Power Supply Connection

The following sub-sections describe basic instructions for connecting the AutoSteer system to available vehicle power sources:

- *Cab Power Connection*
- *Battery Power Connection*

Note: Refer to your Display user manual before connecting the AutoSteer system to vehicle power.

The Main Cable Harness must be connected to a 3-pin 12V power source. Your Display user manual provides specific instructions for connecting power to the AutoSteer system and specifies the appropriate vehicle power source.

Cab Power Connection

1. Locate the cab console right-side 12V power outlet. See *Figure 7-13*.
2. Use this 12V accessory power connector if the Display user manual specifies connecting to power inside the cab and connect the power to the 3-pin socket in the cab using the supplied adapter cable.

- If the 3-pin outlet is not available, a battery cable (PN 201-0156-01) is available. Refer to *Battery Power Connection* on page 67.

Figure 7-13 Power Outlet Inside Cab



Battery Power Connection

1. Locate the vehicle battery on the left-hand side of the cab behind the steps. See *Figure 7-14*.
2. Connect to the vehicle battery if the Display user manual specifies a direct battery connection.

Figure 7-14 Battery Location



Install Warning Label

Install the Warning label on the cab window in a position that is easy to read and does not obstruct the driver's view of the road or surrounding obstacles. See *Figure 7-15*.

Note: Install the warning label with the language that best matches the operator's language. If necessary, install labels in multiple languages. Warning labels are provided in the following languages: English, French, German and Spanish.

Figure 7-15 Autosteer Warning Label



Post-Installation Procedures and Information

The **Post-Installation Procedures and Information** chapter provides information in the following sections:

- *Hydraulic Leak Check*
- *Create New Vehicle*
- *Adjusting the AutoSteer Relief Valve*

Once the entire AutoSteer system, including the Display and display harnesses, have been installed on the vehicle, the procedures and notes provided in this chapter must be followed to complete the installation and prepare the vehicle for full AutoSteer capabilities.

Hydraulic Leak Check

On completion of installing the entire AutoSteer system including the Roof Module and Display, the system needs to be checked for leaks. Follow the procedure below to check for leaks.

1. Clear any bystanders away from the vehicle. If there is a hydraulic leak, they could be injured.
2. Put the vehicle into Park and/or set the parking brake to prevent the vehicle from moving.
3. Turn the vehicle over for a few seconds and if the vehicle starts, immediately shut it down.
4. Walk around the vehicle and check all the hydraulic fittings that were opened. Look for any oil leaks.
5. Once all leaks have been repaired, or if none are found, start the vehicle again and let it run at a low idle.

Note: If an oil leak is noticed during any part of this test, immediately shut down the vehicle and repair the leak.

Note: The front wheels will move when the steering wheel is turned. Make sure the vehicle will not strike anything or anyone before continuing. If necessary, move the vehicle to an open area.

6. Take the vehicle out of Park and/or remove the parking brake. Turn the steering wheel manually to the right and left stops two or three times to get any air out of the hoses.
7. Confirm the front wheels turn in the correct direction and that the vehicle steers the same as it did before the system was installed.

8. Put the vehicle back into Park and/or reset the parking brake. Shut down the vehicle, walk around it again, and check for any hydraulic leaks.
9. Once the leaks have been repaired, or if none are found, start the vehicle again and let it run at a low idle.
10. Take the vehicle out of Park and/or remove the parking brake. Move the vehicle to an open, flat area and leave the vehicle in Park.
11. Power up the Display.
12. Follow the instructions in the Display user manual to navigate to the **Vehicle** window from the **AutoSteer Setup** screen. Select the **Steering Components** and then select **Hydraulic Valve**. If the safety screen requirements have been met, press the **Continue** button.
13. Press the **Hard Right** and **Hard Left** buttons several times to force the vehicle to rotate. The vehicle's wheels should turn in the direction it is commanded. If the wheels rotate in the wrong direction, the hoses were attached to the wrong ports on the valve and need to be switched.
14. Power down the Display, put the vehicle back into Park and/or reset the parking brake, and shutdown the vehicle.
15. Once again check the vehicle for hydraulic leaks and repair any that are found.

Create New Vehicle

Note: Do not start the vehicle until after the Hydraulic Leak Test has been performed on the vehicle. After the vehicle has been created, shut down the AutoSteer system prior to starting the vehicle.

Once the entire system has been installed, the operator must first create a new vehicle profile. This configures the system so the User display can properly communicate with the various sensors and components on the vehicle. Follow the procedure below to create a new vehicle.

1. Make sure the User display is not powered ON.
2. Start the vehicle and take it to a clear area (such as an open field) where it can be calibrated.
3. Power up the AutoSteer system.
4. Follow the instructions provided in the Display user manual to create a new vehicle.

Note: For optimal steering performance, the AutoSteer system must be fully calibrated and then tuned.

Adjusting the AutoSteer Relief Valve

The AutoSteer steering valve has a built-in Load Sense Relief Valve that limits the maximum pump pressure when AutoSteering. The Relief Valve must be adjusted after you have completed the hydraulic installation and before you turn on AutoSteer.

Figure 8-1 AutoSteer Relief Valve Adjustment

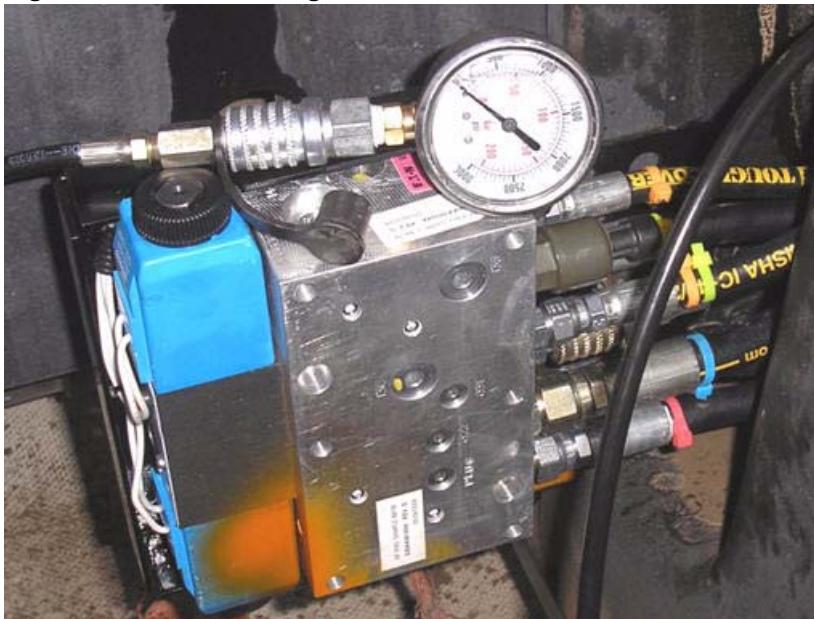


Note: The Relief Valve in *Figure 8-1* is shown on a bench without the hydraulic hoses connected for ease of viewing the adjustment process. When you adjust the Relief Valve, it is done with the valve mounted on the vehicle and the hydraulic hoses connected.

Follow the procedure below to adjust the Relief Valve:

1. Install a 5000 psi pressure gauge on the AutoSteer valve diagnostics coupler labeled as GP. Use a short extension hose on the pressure gauge if necessary for easier reading. See *Figure 8-2*.

Figure 8-2 Pressure Gauge



2. Put transmission into “neutral” or “park” position and turn on the hand brake.
3. Start the engine and leave it at low idle.
4. Immediately check for oil leaks on all hose connections that were opened.
5. Turn the steering wheel full right and then full left and check for correct manuals steering response. Immediately check for oil leaks on all hose connections that were opened. Air in the hoses may cause a slight steering delay when the system is first powered up.
6. Observe the standby pump pressure shown on your pressure gauge. Standby pressure should be very low, or around 350 psi. If standby pump pressure is zero or less than 100 psi, you might have inverted the Pressure and Tank hoses.
7. Clear any bystanders from around the vehicle because you will be moving the front wheels in the next step.
8. With the display turned ON access the **Hydraulic Valve** window from the **Steering Components** Window and command the steering full Right and full Left. The front wheels will turn towards each of the directional stops. The maximum pump pressure will be indicated on the pressure gauge when the wheels hit the stops.
9. Adjust the AutoSteer relief valve so that the maximum pump pressure is 2500 psi when the wheels hit the stops.
10. Tighten the jam nut on the relief valve once the correct pressure setting has been adjusted.
11. Remove your pressure gauge by sliding the sleeve on the quick coupler.

Final Hardware Installation Checklist

This **Final Checklist** chapter contains the verifications steps necessary after the installation of the AutoSteer system.

Note: The Final Hardware Installation Checklist is on the back of this page. Tear this page out of your manual and fill in the checklist after the installation. You should keep a copy of this checklist for future reference when servicing the vehicle.

Machine Model: _____ Year: _____ Serial #: _____

Customer Name: _____

Location/Address: _____

AutoSteer Installation Kit Part Number: _____

NOTES

Name of Installer: _____ Date: _____

System Installation Checklist

1. Wheel Angle Sensor installed and all fasteners are tight. (optional)
2. Display Bracket is installed and all fasteners are tight.
3. Display is installed and all fasteners are tight.
4. Roof Rail and Roof Module are installed and all fasteners are tight.
5. SA Module is installed and all fasteners are tight.
6. All cable ends are connected.
7. All cables are secured with cable ties.

Hydraulic Installation Checklist

1. Steering Valve Bracket is installed and all fasteners are tight.
2. Steering Valve is installed and all fasteners are tight.
3. All hose fittings are tight.
4. Check for oil leaks on all hydraulic connections.
5. All hoses are routed and secured with cable ties.
6. Manual steering is normal after the AutoSteer installation.
7. Relief Valve is adjusted.

AutoSteer Performance Checklist

1. Complete AutoSteer system calibration.
2. Complete AutoSteer system tuning.
3. Check total Wheel Angle Sensor counts. Value_____
4. Line acquisition is satisfactory.
5. On-line steering is satisfactory.
6. Manual override (kick-out) is working. Kick-out _____
7. Check that Manual Steering speed is the same as before the installation.
8. Steering speed from lock-to-lock is satisfactory. Value_____ Sec.

Note: See the *Post-Installation Procedures and Information* chapter for additional information.

Reactive Steering

To determine if a farm vehicle has reactive steering, steer the vehicle in a small circle at low speed and let go of the steering wheel. If the steering wheel rotates slowly and the front wheels return to center position (straight ahead), it is a reactive steering system. If it is a non-reactive steering system, the steering wheel will not rotate and the front wheels will hold their position. Reactive steering systems are not very common in North America and are more often found on tractors manufactured in Europe.

Additional Parts Required

The following 2 assemblies are required to complete a reactive steering installation. Contact your dealer to obtain these assemblies.

Figure 10-1 Reactive Steering Assembly 1 (PN: 200-0562-01)

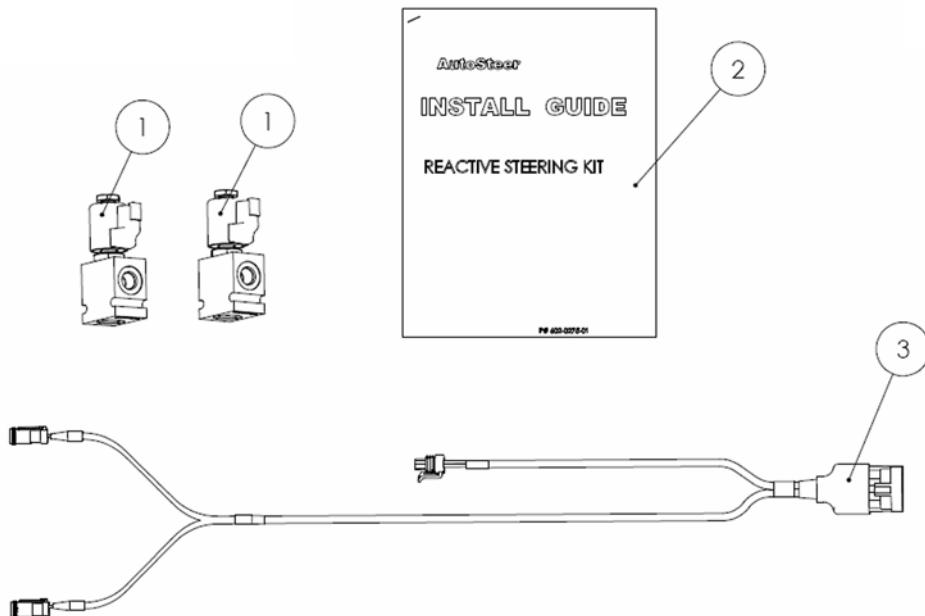
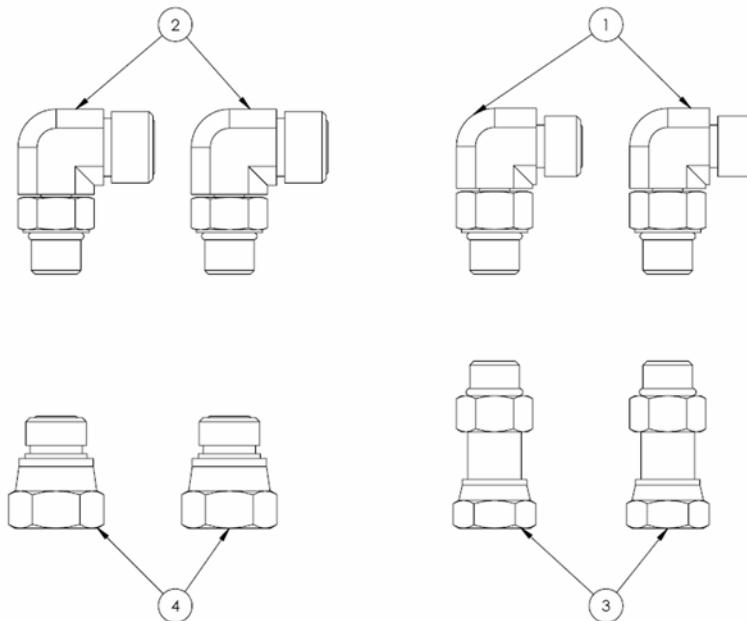


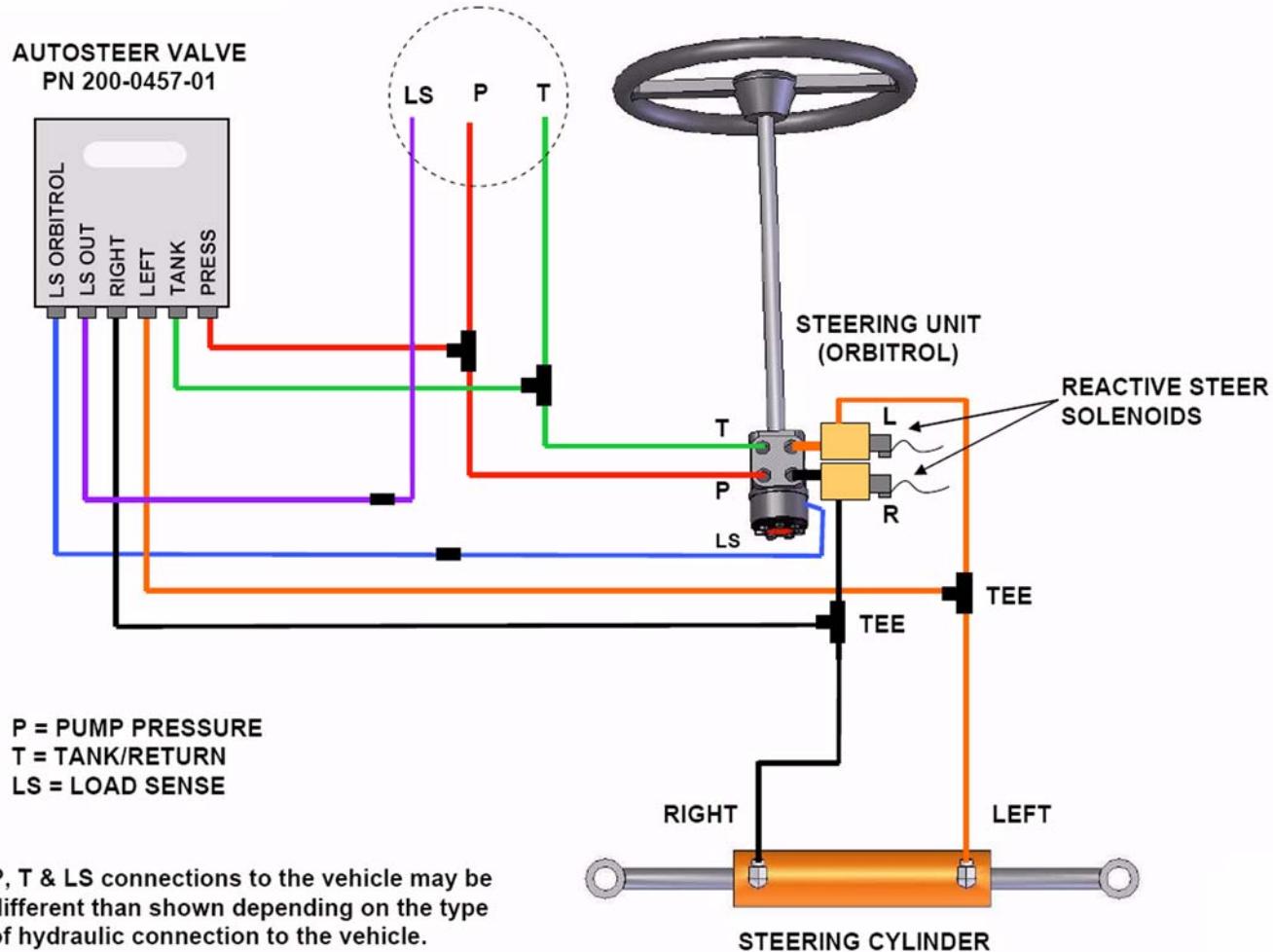
Table 10-1 Assembly 1 Components (PN: 200-0562-01)

Item	Component	Part Number
1.	ASSY, SOL, 12V NRML OPEN	500-0361-01
2.	Reactive Steering Kit Installation Manual	602-0275-01
3.	Reactive Steering Cable Harness	201-0480-01

Figure 10-2 Reactive Steering Assembly 2 (PN: 200-0577-01)**Table 10-2 Assembly 2 Components (PN: 200-0577-01)**

Item	Component	Part Number
1.	STRAIGHT THREAD ELBOW -6M ORFS, 9/16M SAE-ORB	6 C5OLO-S
2.	STRAIGHT THREAD ELBOW -8M ORFS, 9/16M SAE-ORB	8-6_C5OLO-S
3.	ADAPTER -6MORB X -6F ORFS	6 F65OL-S
4.	ADAPTER REDUCER -6M X -8F ORFS	8-6 TRLO-S

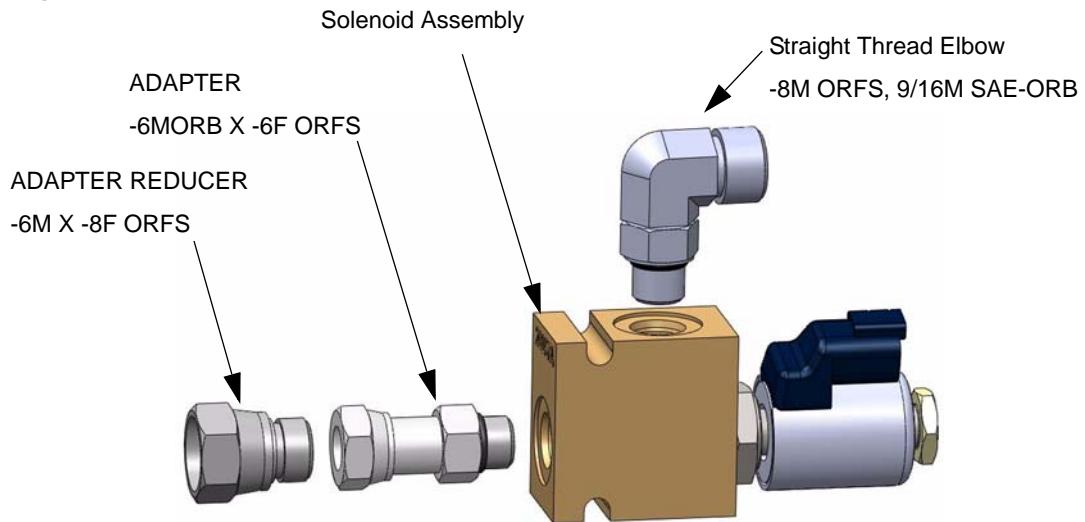
Hose Diagram



Installing the Reactive Solenoids

1. Assemble the two solenoid valves by attaching the adapters and elbows as shown in Figure. Confirm the valve hex is tight and the coil nut is firm. See *Figure 10-3*.

Figure 10-3 Preassemble Reactive Solenoids



2. The following figure is an overview of the completed installation of the 2 reactive solenoids. See *Figure 10-3* and *Table 10-3*.

Figure 10-4 Reactive Solenoids Illustration

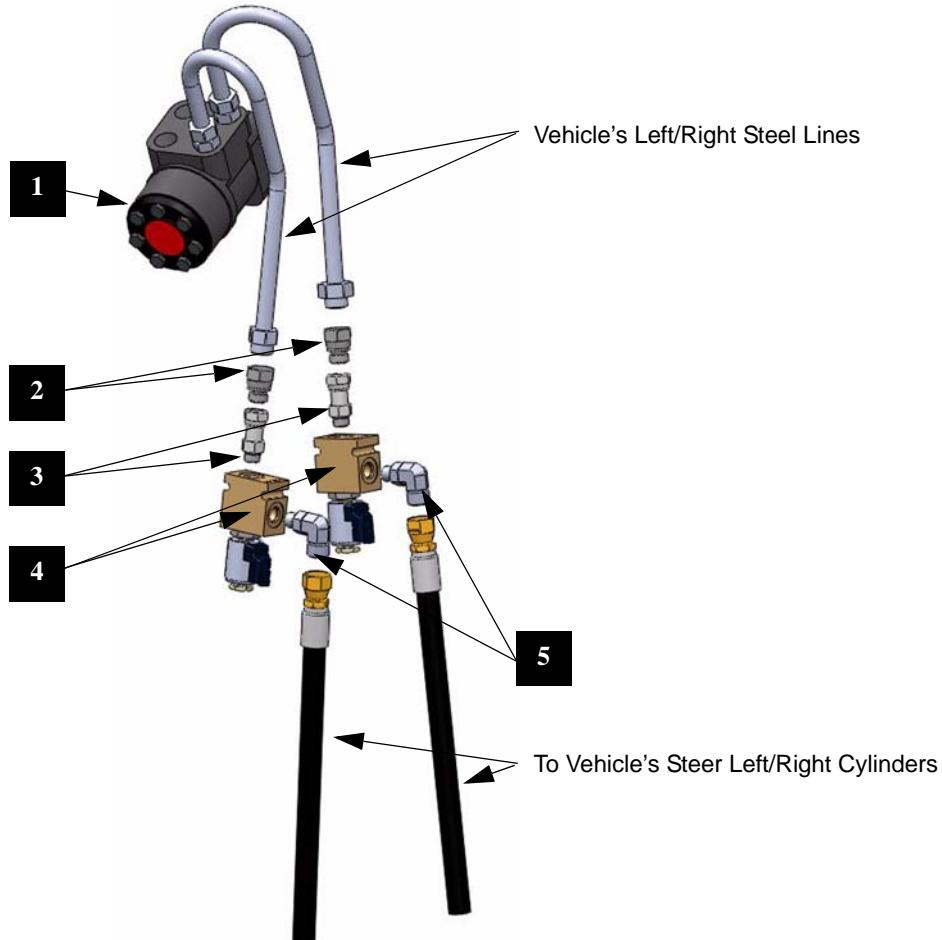


Table 10-3 Item Descriptions

Item	Description
1.	Orbitrol
2.	ADAPTER REDUCER -6M X -8F ORFS
3.	ADAPTER -6MORB X -6F ORFS
4.	Reactive Solenoid Assembly
5.	STRAIGHT THREAD ELBOW -8M ORFS, 9/16M SAE-ORB

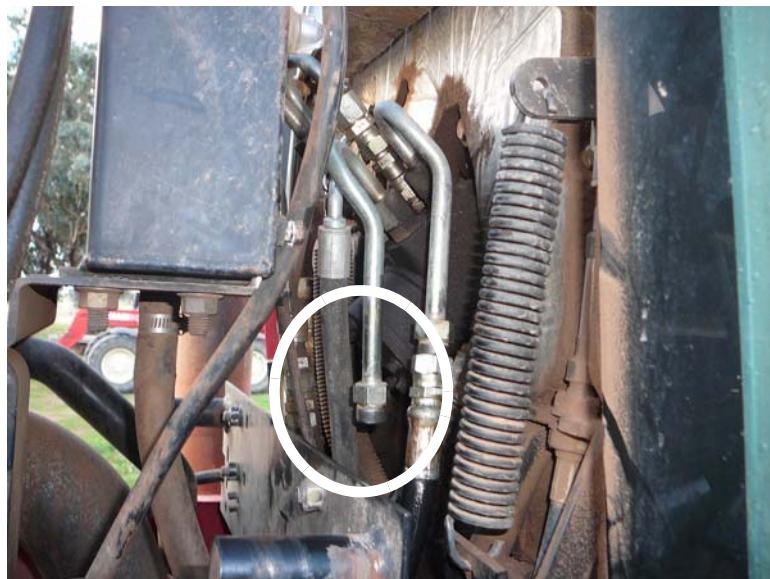
3. Identify the steer lines on the orbitrol. See *Figure 10-5*.

Figure 10-5 Steer Lines on Orbitrol



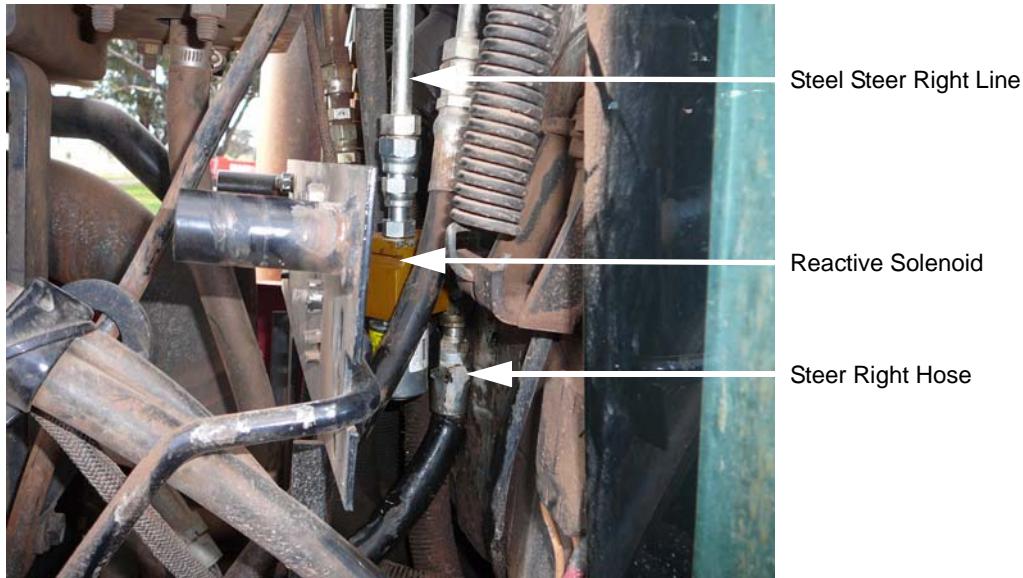
4. Disconnect the Steer Right hose from the steel line coming from the tractor's orbitrol. See *Figure 10-6*.

Figure 10-6 Disconnect Steer Right Hose



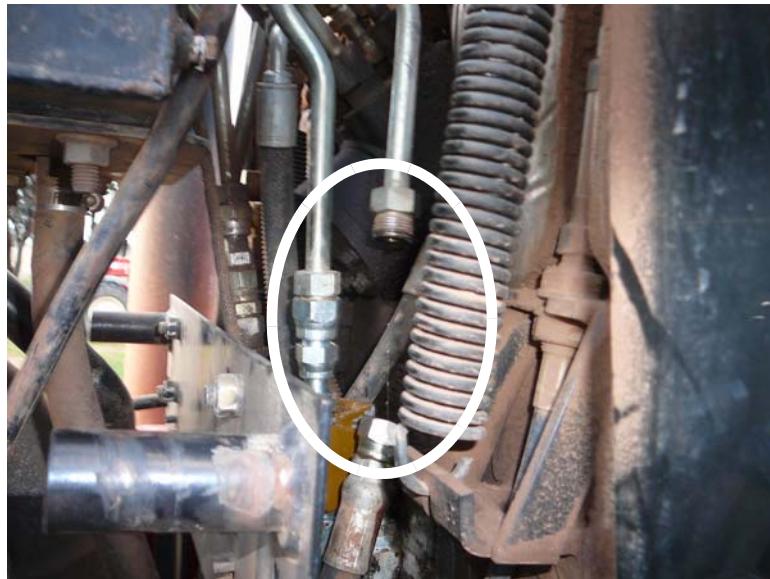
5. Install one of the reactive solenoids between the steer right steel line and hose. See *Figure 10-7*.

Figure 10-7 Install First Solenoid



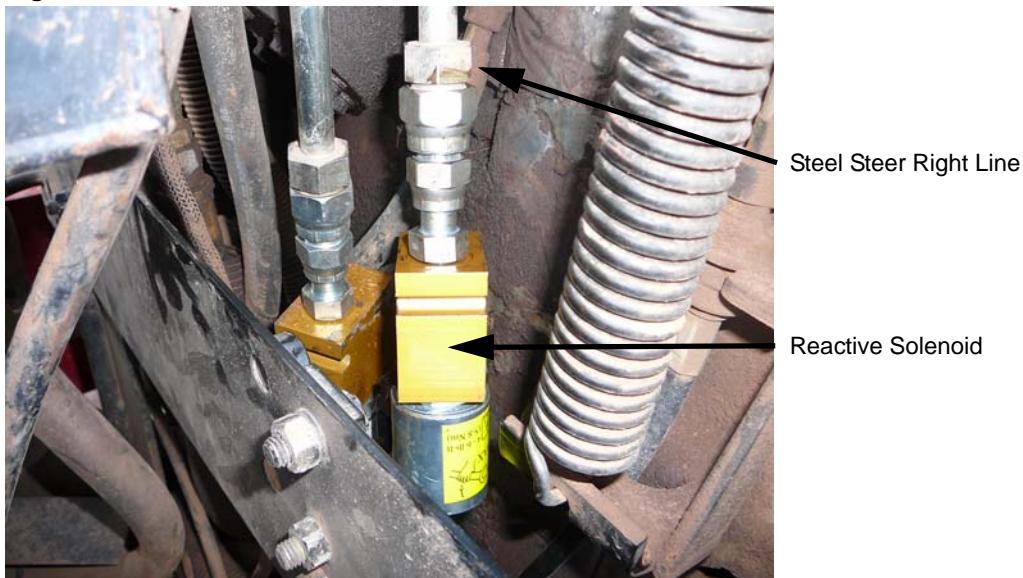
6. Disconnect the Steer Left hose from the steel line coming from the tractor's orbitrol. See *Figure 10-8*.

Figure 10-8 Disconnect Steer Left Hose



7. Install the second Reactive Solenoid between the steer left steel line and hose. See *Figure 10-9*.

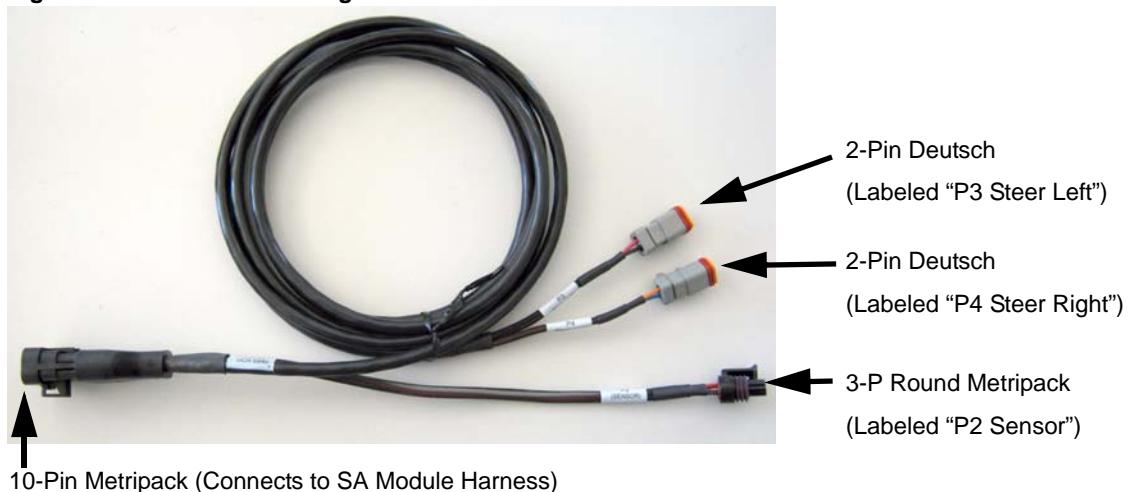
Figure 10-9 Install Second Reactive Solenoid



Installing the Reactive Steering Harness

1. Locate the reactive steering harness. See *Figure 10-10*.

Figure 10-10 Reactive Steering Harness



2. Connect the 10-pin Metripack connector from the reactive steering harness to the 10-Pin connector on the SA Module Harness. See *Figure 10-11*.

Figure 10-11 Connect Reactive Steering Harness to SA Module Harness



3. Connect the 3-pin round connector to the Pressure Transducer on the Steering Valve. See *Figure 10-12*.

Figure 10-12 Connect Reactive Steering Harness to Steering Valve



4. Connect the 2 pin Deutsch connector labelled Steer Left to the left reactive solenoid. See *Figure 10-13*.

Figure 10-13 Connect Reactive Steering Harness to Left Reactive Solenoid



5. Connect the 2 pin Deutsch connector labelled Steer Right to the Right reactive solenoid. See *Figure 10-14*.

Figure 10-14 Connect Reactive Steering Harness to Right Reactive Solenoid

